Enhancing Adherence Following Abnormal Pap Smears Among Low-Income Minority Women: a Preventive Telephone Counseling Strategy

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Background: Although the incidence of precancerous conditions of the cervix has recently been increasing, prompt initial and long-term follow-up care can effectively reduce unnecessary morbidity and mortality. For example, the 4-year survival rates among those individuals at greatest risk for cervical cancer (i.e., minority women of low socioeconomic status) approach 95% with early detection. Women who present with advanced disease have a much poorer outlook (0%-39% survival). Yet, high-risk individuals are least likely to adhere to recommended diagnostic regimens. Purpose: We tested the effectiveness of a brief telephone counseling intervention directed to low-income, inner-city women after they had received an abnormal Pap smear result. The women were counseled on the importance of having an initial and 6-month repeat follow-up diagnostic procedure (i.e., colposcopic examination of the cervix). Methods: A randomized trial design was used to compare the effects on these women of telephone counseling with (n = 192) or without (n = 203) a booster counseling telephone call prior to the appointment for a repeat colposcopy 6 months later, with a telephone appointment confirmation/reminder call (n = 216) and with standard care (i.e., no telephone contact) (n = 217). The telephone counseling protocol probed for and addressed three psychologic barriers to adherence (i.e., attendance at appointment for colposcopy examination): 1) encoding/expectancy (e.g., did the patient understand her risk of developing cervical cancer?); 2) affective/emotional (e.g., was the woman worried about the condition and its consequences?); and 3) self-regulatory/practical (e.g., was the woman likely to forget medical appointments?). Logistic regression was used to analyze the effects of the intervention group and the type of psychologic barriers elicited on compliance with the colposcopic examination. Results: The results of logistic regression analysis (using those who received an appointment confirmation/reminder telephone call as the comparison group) revealed that telephone counseling produced significantly higher adherence rates to the initial colposcopy visit compared with telephone confirmation (300 [76%] of 395 women versus 147 [68%] of 216; odds ratio [OR] = 1.50; 95% confidence interval [CI] = 1.04-2.17). Additionally, standard care resulted in significantly lower adherence rates than did telephone confirmation (109 [50%] of 217 women versus 147 [68%] of 216; OR = 0.47; 95% CI = 0.32-0.73). Regarding attendance at the 6-month repeat colposcopy appointments, the 80 patients who had received telephone counseling prior to the initial visit (and were recommended for follow-up colposcopy) were significantly more likely to adhere than were the 47 patients who had received telephone confirmation (49 [61%] of 80 women versus 17 [36.2%] of 47; OR = 2.70; 95% CI = 1.15-6.51). The 6-month adherence rates for patients in the telephone confirmation group and the standard care group (n = 30) were low and did not differ significantly (17 [36.2%] of 47 women versus nine [30.0%] of 30; OR = 1.08; 95% CI = 0.40-2.89). Forgetting medical appointments (OR = 0.31; 95% CI = 0.19-0.51) and having scheduling conflicts (OR = 0.45; 95% CI = 0.28-0.72) were also associated with lower rates of adherence. Conclusion: The use of telephone counseling appears to be an effective strategy for enhancing initial and long-term adherence to a follow-up cervical diagnostic procedure in a traditionally underserved population. Patients who respond to a positive Pap test result with a particular profile of psychologic barriers may require more intensive and targeted counseling interventions. [J Natl Cancer Inst 1997;89:703-8]

The incidence of cervical intraepithelial neoplasia (CIN), a precancerous condition of the cervix, has recently been increasing, particularly among younger women (1,2). Furthermore, while the overall rates of newly diagnosed cervical cancer have decreased (3), the rates of invasive cervical carcinoma in women under 45 years of age have risen dramatically (4). Infection with certain strains of the sexually transmitted human papillomavirus, which has been strongly linked to the development of CIN (5-7), also has been escalating to epidemic proportions (8). Although these lesions can be treated and progression of cervical cancer can be prevented, recurrences of CIN are not uncommon (9).

Prompt initial and long-term follow-up care for patients with cervical cancer can effectively reduce unnecessary morbidity and mortality (10). It is therefore critical that patients adhere to follow-up diagnostic appointments after receipt of an abnormal Pap smear as well as to any treatment recommendations (11), since 4-year survival rates approach 95% when cervical cancer is detected at an early stage compared with a 0%-39% rate when the disease is detected at an advanced stage (10).
follow-up includes the performance of a colposcopic examination, along with biopsy of areas that appear abnormal (12). Frequently, patients undergo repeat follow-up colposcopy examination every 6-12 months over a 2-year period and receive local therapy where indicated. Tragically, however, those at greatest risk for precancerous cervical disease (e.g., minority women of low socioeconomic status) are not only least likely to have an initial Pap smear (13-15) but are also less likely to adhere to recommended diagnostic procedures if an abnormality is detected (16-19).

We report on the impact of a brief preappointment telephone-counseling intervention—targeted to comprehensively address barriers to adherence for both an initial and a 6-month repeat colposcopy visit—among a low-income, inner-city population. Preappointment barriers counseling (with and without a 6-month follow-up booster counseling call) was compared with a preappointment telephone confirmation/reminder intervention and with standard care (i.e., no telephone contact). In a previous study (20), implementation of a conceptually similar telephone counseling call was found to be effective in improving short-term adherence after an initial missed appointment for colposcopy (i.e., colposcopic examination of the cervix). However, the efficacy of telephone counseling may be increased when administered prior to a missed appointment, before a pattern of non-adherence has been triggered.

The present study was guided by the Cognitive-Social Health Information Processing (C-SHIP) (21) model, which highlights the role of the specific cognitions (i.e., thoughts) and affects (i.e., feelings) that become activated in the processing of health-relevant information, from the formation of intentions to perform health-protective behaviors to their actual execution (22). According to the model, individuals react to health threats in patterns that are predictable and stable, yet difficult for the individual to spontaneously self-assess and self-manage (8). We hypothesized that telephone counseling compared with a telephone appointment confirmation/reminder call or with standard care, given to low-income, inner-city women after their receipt of an abnormal Pap smear result, would result in their improved adherence to attendance at initial and 6-month repeat colposcopy visits. A secondary aim was to explore whether the impact of barriers counseling would be enhanced with the addition of a 6-month follow-up booster call.

**Methods**

The 828 women who participated in the study had received an initial positive Pap smear result and were referred during the period of October 1992 through March 1995 for a diagnostic follow-up procedure (colposcopic examination of the cervix) at the colposcopy clinics in the Gynecologic Oncology Sections of the Departments of Obstetrics and Gynecology at Temple University Hospital (n = 400) or at the Allegheny University Hospital–East Falls Campus (n = 428), which are both located in Philadelphia. Patients were excluded from the study if they did not have a telephone, were not able to communicate readily in English, had a previous history of cervical cancer (to minimize differences in familiarity with cancer-relevant conditions and procedures, such as colposcopic examination), or had Pap smears that were suggestive of cancer (because of the focus of the study on cancer prevention, rather than cancer control).

The 828 participants ranged in age from 14 to 54 years (mean age ± standard deviation = 25.1 ± 7.8 years). The sample was largely African-American (n = 712; 86%), with Hispanic (n = 50; 6%) and Caucasian (n = 50; 6%) comprising the majority of the remainder of the sample; patients who responded with another racial and/or ethnic group constituted only 2% (n = 16) of the sample. Five hundred five (61%) of the patients were unemployed and the remaining 323 (39%) were either employed (n = 190; 23%) or a student (n = 133; 16%). Four hundred seventy-two (57%) of the patients were married, 50 (6%) were separated, and 74 (9%) were widowed. Five hundred eighty (70%) of the patients had children (the average number of children for these individuals was 2.2), and 157 (19%) of the participants were pregnant at the time of the initial colposcopy appointment. Among patients for whom referring disease status was available (i.e., those in the counseling and confirmation/reminder groups who adhered to the initial colposcopy appointment) (n = 447), 152 (34%) showed atypical squamous cells on cytology with no clear dysplasia, 237 (53%) showed evidence of mild dysplasia, and 58 (13%) showed evidence of moderate dysplasia or carcinoma in situ.

Four hundred eighty-nine (59%) of the participants received a recommendation to schedule a 6-month repeat colposcopy appointment after the initial visit; 293 (60%) of these patients complied with the recommendation. These percentages did not differ significantly across groups: χ² (2 df) = 0.39; P > .80 for physician recommendations to schedule a 6-month repeat colposcopy appointment; χ² (2 df) = .004; P > .90 for patient compliance with the recommendation. Names of potential participants were obtained from the appointment list at each colposcopy clinic. Eligible patients were randomly assigned by use of a random numbers table to one of the four conditions prior to the initial colposcopy appointment. A health educator then attempted to contact patients in the three intervention groups (i.e., all of the groups except for standard care) by telephone in the week prior to their scheduled visit. Of the 679 individuals who were contacted, 611 (90%) agreed to participate, resulting in the following randomized sample sizes: telephone appointment confirmation (n = 216), telephone barriers counseling without a 6-month booster counseling call (n = 203), and telephone barriers-counseling with a 6-month booster counseling call at the 6-month repeat colposcopy visit (n = 192). Adherence was also tracked for the group of patients who were randomly assigned to standard care (n = 217), with whom no direct contact was made.

Attempts to reach the patient were made during both day and evening hours; patients were called up to a maximum of 10 times. The mean number of telephone calls made to individuals who were ultimately successfully contacted was 2.1. The mean number of telephone calls made to individuals who were not contacted was 4.8. No significant sociodemographic differences emerged among the three contact groups (i.e., telephone confirmation, telephone counseling with booster, and telephone counseling without booster) for whom background information was available.

**Standard Care**

At Allegheny University Hospital, standard care entailed a standard notification letter from the clinic informing patients of their abnormal Pap smear result and requesting that they call the clinic to arrange an initial colposcopy appointment. At Temple University Hospital, the referring health care provider contacted the colposcopy clinic and arranged for the initial colposcopy appointment. Patients were then notified of their abnormal Pap smear result and their colposcopy appointment time via a letter from the referring health care provider. Patients requiring a 6-month repeat colposcopic examination were notified via letter from the colposcopy clinic, which instructed them to call the clinic to schedule an appointment.

**Preappointment Telephone-Confirmation Intervention**

In addition to the standard clinic notification procedures, patients received a brief telephone reminder call 1 week prior to the appointment that confirmed their upcoming colposcopy visit. This call provided a cue for action by reminding patients of their upcoming appointment, and basic sociodemographic information was also collected during the initial telephone contact. As with standard care, patients requiring a 6-month repeat colposcopic examination were contacted via letter by the colposcopy clinic informing them that they needed to call to schedule an appointment.

**Preappointment Telephone Barriers-Counseling Intervention Without Booster**

In addition to the standard clinic notification procedure, patients received a telephone call (designed to last 10-15 minutes) 1 week prior to the appointment that confirmed the upcoming colposcopy visit, collected basic sociodemographic data, and provided a structured telephone barriers-counseling intervention. The telephone counseling intervention was adapted from a previous study (20), in
which barriers to adherence were elicited and addressed for nonadherent patients. However, the open-ended format used in that study was modified so that patients were systematically asked about the presence or absence of all potential barriers. This was done to control for response biases and to ensure that all relevant barriers were elicited for each participant. Consistent with previous research, patients were probed for three types of barriers.

**Encoding/expectancy.** Encoding/expectancy barriers assessed the individual’s appraisal and thoughts about her condition and its management, including her perceptions of the following: 1) the meaning of an abnormal Pap smear; 2) the purpose of a colposcopic examination; 3) the purpose of a biopsy; and 4) how abnormal cells develop on the cervix.

**Affective/emotional.** Affective/emotional barriers assessed the individual’s feelings and concerns about the following: 1) having cancer; 2) undergoing the diagnostic procedure; 3) the ability to have children in the future; and 4) potential treatments.

**Self-regulatory/practical.** Self-regulatory/practical barriers assessed the individual’s problems with the following: 1) forgetting medical appointments; 2) cost of the appointment(s); 3) child-care-, job-, or school-related conflicts; and 4) transportation difficulties.

A structured message was then delivered for each barrier that was elicited from the patient. These messages were designed to help the patient accurately perceive the seriousness of her medical condition (either minimizing nor exaggerating its significance) (17,23-27) and to psychologically reframe the cancer threat by shifting attention from its emotion-arousing features (e.g., “I might die”) to a focus on the objective features of the information (e.g., “I will be fine if I keep my doctor’s appointment”) (16,21,28-32) as well as to provide concrete strategies for overcoming practical difficulties (8,17,20). For example, if the patient reported an encoding/expectancy barrier (such as lack of adequate understanding about the purpose of a colposcopic examination), the health educator explained the procedure and emphasized that: “If left untreated, abnormal cells in the cervix can develop into cancer.” If an affective/emotional barrier (e.g., anxiety about the procedure) was elicited, the health educator provided more accurate and reassuring information about discomfort. If a self-regulatory/practical barrier (e.g., forgetting) was reported, the health educator offered specific action plans for attending the clinic (e.g., putting a note on the door of the refrigerator).

**Preappointment Telephone Barriers-Counseling With Booster**

In addition to the standard procedures, the patients in this group received the counseling protocol described above. Furthermore, patients with a scheduled 6-month repeat colposcopy visit received a booster phone call in the week prior to the follow-up appointment. The booster telephone call reminded them of their appointment and provided a modified counseling intervention. Specifically, patients were asked the following questions: 1) if they knew the importance of their follow-up colposcopy appointment and what the appointment would entail; 2) if they had any specific concerns about the appointment; and 3) if they had any specific problems about coming to the appointment. For all patients, a brief structured health message was delivered after each question. Patients generally responded that they were aware of the importance of the appointment and expressed no specific concerns or problems.

**Adherence**

Patients in all four groups were considered to have adhered to the initial or 6-month repeat colposcopy appointment if they attended at the time originally scheduled with the colposcopy clinic or if they called to reschedule and subsequently attended within 6 months of the original appointment. Consistent with the medical management of precancerous cervical disease, a 6-month time frame was used for adherence, since a longer delay interval would have had implications for disease progression. Adherence was validated by checking the weekly sign-in list for the colposcopy clinic.

**Preappointment Psychologic Barriers Elicited**

For the telephone counseling groups, the patient’s answer was recorded for each of the 12 barriers (four in each of the three main barrier categories) assessed during the initial telephone contact. The measurement of barriers was dichotomous (yes/no). For the encoding/expectancy items, a “no” response represented a barrier; for the affective/emotional and self-regulatory/practical items, a “yes” response represented a barrier.

**Preappointment Telephone Barriers-Counseling With Booster**

For the initial colposcopy appointment, the two telephone-counseling groups were combined. Since the telephone-confirmation intervention was expected to have an effect on adherence intermediate to that of the other two groups, this group was used as the comparison condition. The first dummy variable compared the standard care group with the telephone confirmation group so that lower adherence rates in the standard-care group would result in an odds ratio (OR) of less than one. The second dummy variable compared the combined telephone-counseling group to the telephone confirmation group so that higher adherence rates in the telephone-counseling group would result in an OR of greater than one (Table 1).

The results of logistic regression analysis revealed that group assignment accounted for a significant amount of the variance in adherence (P<.001; Table 2). Individuals in the standard care group (n = 217) were less likely to adhere to the initial colposcopy appointment than were individuals in the telephone confirmation group (n = 216) (50% versus 68% adherence; OR = 0.47; 95% confidence interval [CI] = 0.32-0.73). Furthermore, individuals in the combined telephone-counseling intervention group (n = 395) were more likely to adhere to the initial colposcopy appointment than were individuals in the telephone confirmation intervention group (76% versus 68% adherence; OR = 1.50; 95% CI = 1.04-2.17). Thus, telephone counseling was found to be a statistically significant improvement over telephone confirmation, which, in turn, was found to be a statistically significant improvement over standard care.

**Results**

We first present the analyses of the relationship between the intervention group and the rate of adherence for both the initial and repeat colposcopy appointments. Frequency data are then provided for the barriers reported by patients in the telephone counseling conditions during the initial telephone contact. Finally, the relationship between the barriers reported and the adherence to the initial appointment are presented, both individually and as a group. Since no differences were found in either the adherence rates or the intervention effects between the two hospital sites, data from both clinics are combined in the following analyses.

**Adherence to Initial Colposcopy Appointment**

For the initial colposcopy appointment, the two telephone-counseling groups were combined. Since the telephone-confirmation intervention was expected to have an effect on adherence intermediate to that of the other two groups, this group was used as the comparison condition. The first dummy variable compared the standard care group with the telephone confirmation group so that lower adherence rates in the standard-care group would result in an odds ratio (OR) of less than one. The second dummy variable compared the combined telephone-counseling group to the telephone confirmation group so that higher adherence rates in the telephone-counseling group would result in an OR of greater than one (Table 1).

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**Analysis Plan**

Logistic regression analyses were used to examine the relationship between the intervention group and adherence for both the initial and 6-month repeat colposcopies. The effects on the adherence of each of the barriers elicited during the telephone-counseling procedure were tested univariately via chi-squared analyses (with the use of a Bonferroni correction for alpha level), and those found to be univariately significant were tested simultaneously by use of logistic regression. When applicable, all P values resulted from use of two-sided tests.

**Table 1. Adherence rates to the initial and repeat colposcopy appointments by intervention type**

<table>
<thead>
<tr>
<th>Intervention Type</th>
<th>Initial adherence, %</th>
<th>Repeat adherence, %</th>
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<tbody>
<tr>
<td>Standard care</td>
<td>50 (109/217)</td>
<td>30 (9/30)</td>
</tr>
<tr>
<td>Telephone confirmation</td>
<td>68 (147/216)</td>
<td>36 (17/47)</td>
</tr>
<tr>
<td>Combined telephone counseling</td>
<td>76 (300/395)</td>
<td>61 (49/80)</td>
</tr>
</tbody>
</table>

*Values in parentheses = number of individuals/total number.
The adherence rate of the patients who were contacted but declined to participate (59 [64%] of 92 patients) did not significantly differ from the adherence rate of patients in the telephone confirmation group (68%; \( \chi^2 [1 \, df] = .36; P > .50 \)). Furthermore, the adherence rate of patients who did not have a telephone (134 [51%] of 264 patients) was identical to that of standard care women (50%; \( \chi^2 [1 \, df] = 0; P = 1 \)).

The analyses were also conducted including potential sociodemographic confounders (i.e., race, educational level, marital status, and employment status) on the first step of the regression for the telephone confirmation and the combined-counseling groups. Inclusion of these variables did not alter the significant difference (\( P < .001 \)) between the intervention groups, and none of the sociodemographic variables were significant on the last step of the regression (all \( P \) values >.14).

### Adherence to Repeat (6-Month) Colposcopy Appointment

The two telephone-counseling intervention groups were compared to determine if their rates of adherence to the 6-month visit were significantly different. Since they were not (\( \chi^2 [1 \, df] = 1.68; P > .10 \)), the counseled participants were analyzed as one intervention group.

The results of logistic regression analysis revealed that group assignment accounted for a significant amount of the variance in 6-month follow-up adherence (\( P < .01 \); Table 2). Individuals who had received telephone counseling (\( n = 80 \)) were significantly more likely to adhere to the repeat colposcopy appointment than were individuals who had received telephone confirmation (\( n = 47; 61\% \) versus 36% adherence; OR = 2.70; 95% CI = 1.15-6.51). Comparison of the telephone confirmation intervention group (\( n = 47 \)) with the standard care group (\( n = 30 \)) indicated that follow-up adherence did not vary significantly between the two groups (36% versus 30% adherence; \( P > .74 \)).

The pattern of results did not change for the intervention groups when potential sociodemographic confounders were included in the regression analysis.

### Barriers Reported by the Counseling Group

The pattern of barriers elicited prior to the initial colposcopy appointment was assessed and compared, collapsing across the two counseling groups (\( n = 395 \); Table 3).

### Encoding/Expectancy Barriers

Lack of knowledge about how abnormal cells develop on the cervix was the most common encoding/expectancy barrier among the 395 (84%) patients. Lack of knowledge about colposcopic examination was reported by 70% of the patients, lack of understanding about a biopsy was reported by 65% of the patients, and 63% of the sample indicated a lack of understanding about the implications of their abnormal Pap smear result. Overall, 32.0% of the patients reported all four encoding/expectancy barriers, 34.3% reported three barriers, 20.1% reported two barriers, 11.3% reported one encoding/expectancy barrier, and only 2.3% reported no encoding/expectancy barriers.

### Self-regulatory/Practical Barriers

The most common self-regulatory/practical barriers reported by the patients (\( n = 395 \)) involved the cost of the appointment (36%); child-care-, job-, or school-related conflicts (32%); and

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### Table 2. Logistic regression results for adherence to initial and 6-month repeat colposcopy appointments

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio (OR)</th>
<th>( P^* )</th>
<th>Lower limit, 95% confidence interval</th>
<th>Upper limit, 95% confidence interval</th>
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<tbody>
<tr>
<td><strong>Initial colposcopy adherence (n = 828)</strong></td>
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<tr>
<td>Standard care (( n = 217 )) versus telephone confirmation (( n = 216 ))†</td>
<td>0.47</td>
<td>&lt;.001</td>
<td>0.32</td>
<td>0.73</td>
</tr>
<tr>
<td>Telephone counseling (( n = 395 )) versus telephone confirmation (( n = 216 ))†</td>
<td>1.5</td>
<td>&lt;.05</td>
<td>1.04</td>
<td>2.17</td>
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<tr>
<td><strong>Repeat colposcopy adherence (n = 157)</strong></td>
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<tr>
<td>Standard care (( n = 30 )) versus telephone confirmation (( n = 47 ))†</td>
<td>1.08</td>
<td>&gt;.74</td>
<td>0.40</td>
<td>2.89</td>
</tr>
<tr>
<td>Telephone counseling (( n = 80 )) versus telephone confirmation (( n = 47 ))†</td>
<td>2.70</td>
<td>&lt;.05</td>
<td>1.15</td>
<td>6.51</td>
</tr>
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</table>

*For the outcome variable, nonadherence was coded ‘0’ and adherence was coded ‘1’.

†For the outcome variable, nonadherence was coded ‘0’ and adherence was coded ‘1’.

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forgetting medical appointments (25%). Only a small percentage of patients reported transportation difficulties (8%). Overall, 39.7% of the patients reported one self-regulatory/practical barrier, 22.2% reported two, 5.2% reported three, fewer than 1% reported all four, and 32.6% reported none.

**Barriers and Nonadherence**

Individual barriers were examined for their effects on adherence to the initial colposcopy appointment, both univariately (using chi-squared analyses, with a Bonferroni correction for alpha level) and as a group (using logistic regression analyses). Endorsement of two self-regulatory/practical barriers was significantly related to lower levels of adherence. More nonadherers than adherers said that they generally forgot about their medical appointments—\(\chi^2[1, df] = 22.5, P < .001 (42 [44\%] of 95 versus 57 [19\%] of 300 women; OR = 0.31; 95\% CI = 0.19-0.51); more nonadherers than adherers indicated child-, job-, or school-related conflicts with the appointment—\(\chi^2[1, df] = 11.1; P < .01 (44 [46\%] of 95 versus 81 [27\%] of 300 women; OR = 0.45; 95\% CI = 0.28-0.72).

Logistic regression analysis was conducted to determine whether the effects of these two barriers were independent of one another (Table 4). The overall equation was significant (\(P < .0001\)). The barrier of forgetting remained independently significant (OR = 0.35; 95\% CI = 0.21-0.58) as did the scheduling conflict variable (OR = 0.53; 95\% CI = 0.33-0.87).

**Discussion**

This study addressed barriers to adherence to an initial and a 6-month repeat follow-up colposcopic examination among low-income, inner-city women with abnormal Pap smears. Consistent with the C-SHIP model (8,21), a preappointment telephone confirmation/reminder call—which provided a salient external behavioral prompt—resulted in higher rates of adherence to the initial visit than did standard care. Moreover, a preappointment telephone barriers-counseling call—which was designed to comprehensively elicit and target the individual’s internal psychological barriers—was even more effective in improving initial adherence. Most strikingly, the benefits of telephone barriers-counseling remained strong over time, with approximately two-thirds attendance among counseled patients with a scheduled 6-month repeat colposcopy visit. In contrast, 6-month adherence rates for telephone confirmation patients were low, with only about one-third attendance, and did not differ significantly from those of standard care patients. Although receipt of a 6-month booster call did not substantially increase adherence over receipt of an initial counseling call only, a larger sample size may have yielded a significant difference.

The results support the use of a psychologically proactive, or preventive, approach. The prospect of attending a colposcopy appointment can be potentially threatening, particularly when there are a high degree of misinformation and disease-related concerns (24,25,29,33,34). In an effort to reduce the distress associated with unfamiliar and personally threatening medical feedback (35,36), individuals often attempt to avoid triggers, situations, or cues that remind them of their risk (28,37-39). Unfortunately, these reactions may be especially likely to be primed when adaptive action is required (e.g., when dealing with a cancer-diagnostic regimen such as a colposcopic examination). In the present sample, patients were found to display a high degree of encoding/expectancy and affective/emotional barriers before the initial appointment, suggesting that they generally misinterpreted the severity of their condition (e.g., as indicating the presence of cervical cancer). The telephone counseling intervention addressed these barriers in a coordinated fashion and thereby inoculated the patient to the consequences of nonadherence before they were triggered and the upcoming appointment was missed.

Individuals who reported either of two self-regulatory/practical barriers—a tendency to forget appointments and job-, school-, or child-related conflicts—were less likely to adhere. These effects were obtained, despite the fact that the majority of patients did not report a self-regulatory/practical barrier. Hence, when this type of barrier is identified, it may be a strong indicator of the need for more intensive preappointment interventions (17). In future studies, it will be important to identify subgroups of patients most and least likely to benefit from these types of interventions. The principles tested and the techniques developed are relevant not only to the medical and psychosocial management of cervical cancer risk but also to the surveillance of other cancers where control options are available but where the health consequences of one’s cancer-protective behaviors are not immediately evident and the individual must cope with feedback that is both personally threatening and probabilistic (8).

Ultimately, the results should fill a theoretic and empiric void by providing a framework for how to systematically target preparation for cervical cancer risk screening and diagnosis to the specific psychologic profile of the patient and thereby helping to bridge the gap between the availability and effective use of information about one’s cancer risks and options. Such targeting will be crucial for improving short- and long-term consequential outcomes, particularly before the development of can-

| Table 4. Effect of barriers on adherence to initial colposcopy appointment (n = 395) |
|----------------------------------------------|-----------------|-----------------|-----------------|
|                                | Odds ratio | \(P^*\) | 95\% confidence interval | 95\% confidence interval |
| Forgets appointments† | \(n = 99\) of 395: 25\% | 0.31 | <.0001 | 0.19 | 0.51 |
| Scheduling conflicts†   | \(n = 126\) of 395: 32\% | 0.45 | <.02 | 0.28 | 0.72 |

\(P^* \) values were determined by use of logistic regression analysis.

†For both barriers, a reply of “no” was coded “0” and a reply of “yes” was coded “1”.

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cer, since it can help buttress important coping skills before maladaptive psychologic responses are activated.

References

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Notes

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