Despite efforts to modify adolescents’ risky sexual behaviors, more than one third (34.8%) of high school students report having been sexually active within the past 3 months, and only 56.8% of sexually active teens report using a condom the last time they had intercourse. Adolescents are more likely than adults to suffer negative consequences from their sexual behavior, consequences that include a high rate of sexually transmitted diseases (STDs), unintended pregnancies, and infection with the Human Immunodeficiency Virus (HIV). In fact, many patients presenting with Acquired Immune Deficiency Syndrome (AIDS) as 20- to 25-year-olds became infected with HIV as a result of sexual activity during adolescence.

Many adolescents report that they want to talk with their primary care physician about sex and STDs, but although many primary care clinicians are aware of recommendations for counseling these patients, they do not provide the recommended counseling. Instead, more than 90% of students report having learned about HIV in school.

Professional societies and national guidelines recommend that physicians screen, counsel, and provide education for patients about sexual behavior, risk factors for HIV/STDs, responsible sexual behavior, and HIV/STD risk reduction. Most guidelines also recommend screening for sexual abuse. However, several studies have documented low rates of compliance...
with these guidelines. Most of these studies have involved physicians’ screening and counseling behaviors with adult patients and found that compliance with recommendations is relatively poor.

Few studies, however, have examined physicians’ provision of these preventive services to adolescents. In one study, Millstein et al found that California physicians reported screening 73% of their adolescent patients for sexual activity, but those providers who asked adolescents about sexual behavior often did not provide specific risk-reduction counseling. In a recent national survey of adolescents, only 68.1% reported ever having discussed STDs or pregnancy prevention with their health care provider.

This study examined family physicians’ delivery of adolescent reproductive health preventive services, including screening, counseling, and clinical interventions, to adolescents. Specifically, we sought to determine the familiarity of family physicians with reproductive health clinical guidelines for adolescent patients, since provision of appropriate care has been associated with greater knowledge of and acceptance of preventive care guidelines. In addition, we measured the self-reported behavior of family physicians in providing reproductive health services and examined the association of sociodemographic and practice-related factors with the provision of those services.

Methods

Subjects and Survey Methods

We drew a stratified random sample of 354 family physicians in the Buffalo, Rochester, and Syracuse metropolitan statistical areas (MSA) of New York State from the American Medical Association Masterfile. Each of the 354 family physicians was mailed a self-administered questionnaire about the health services they routinely provide to adolescent patients. We also used reminder letters and follow-up phone calls to encourage responses from initial nonrespondents at 2- and 4-week intervals after the initial mailing. The initial mailing of the questionnaire yielded information indicating that 59 physicians in the sample had not seen an adolescent for a well (ie, non-illness related) visit in the previous 6 months, or the physician had moved, died, or retired. These 54 physicians were excluded from the study, yielding a sample of 295 physicians (83% of the original Masterfile sample) eligible to participate in the study.

Each family physician received a $20 honorarium with the survey mailing. The study protocol was approved by the University of Rochester School of Medicine Research Subjects Review Board.

Instrument

Respondents were asked to rate their familiarity with each of the seven different preventive care guidelines listed in Table 1. The familiarity was scored on a 5-point Likert scale ranging from 1 (“Have never heard of these”) to 5 (“Have read all of this”). Subjects scoring 3, 4, or 5 for a particular guideline were categorized as being familiar with the guideline.

The survey instrument included questions about provider and practice demographics and usual screening and counseling practices. These included reproductive health-related practices during adolescent well visits and services offered during the most recent adolescent preventive visit.

Each family physician was asked to report the proportion of his/her patients ages 15–18 with whom they usually discuss 12 specific counseling content areas dealing with sexual behaviors and issues. These questions included having discussed the adolescents’ relationships, the age at which the adolescent thinks sexual intercourse is appropriate, sexual behaviors, sexual identity, condom use, contraceptive use, risk of getting HIV, and risk of getting other sexually transmitted diseases. Additional questions included how often the patients’ health care providers had advised the use of condoms, gave handouts about sexual responsibility, gave handouts about HIV prevention, and gave condoms to patients.

The questionnaire also included questions, similar to the aforementioned questions, in which the family physician was asked about the services and counseling

<table>
<thead>
<tr>
<th>Practice Guideline</th>
<th>%</th>
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<tr>
<td>American Academy of Family Physicians Age Charts for Periodic Health Exam</td>
<td>79</td>
</tr>
<tr>
<td>CDC Advisory Committee on Immunization Practices guidelines</td>
<td>75</td>
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<tr>
<td>US Preventive Services Task Force Guide to Clinical Preventive Services</td>
<td>43</td>
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<tr>
<td>American Medical Association Guidelines for Adolescent Preventive Services</td>
<td>39</td>
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<td>Agency for Healthcare Research and Quality Clinicians Handbook of Preventive Services:</td>
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<td>Put Prevention Into Practice</td>
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<tr>
<td>American Academy of Pediatrics Child Health Supervision Guidelines II</td>
<td>22</td>
</tr>
<tr>
<td>Maternal Child Health Bureau’s Bright Futures guidelines</td>
<td>3</td>
</tr>
</tbody>
</table>

* Familiarity was defined as having read some, most, or all of the practice guideline.
provided to the most recent adolescent seen in the practice for one of several categories of office visits. These included preventive care visits, pelvic examinations (for female adolescents), visits for STD screening tests, and follow-up appointments for reproductive health care issues.

Data Analysis

An overall reproductive preventive care performance score was calculated as the averaged sum of the percentage of adolescents with whom each family physician reported performing each screening and counseling service. The maximum possible score was 100 points, and the mean score for all study participants was 63.6 (SD=22.7). We used chi-square tests to compare the demographic characteristics of respondents and nonrespondents to the questionnaire. We used independent t tests and chi-square tests to compare differences in rates of performance of recommended reproductive health counseling, screening, and educational interventions. We used multivariate linear regression models to assess the relationship between reproductive health service performance, physicians’ demographics, and familiarity with preventive care guidelines.

Results

Description of Sample

Of the 295 eligible family physicians, 179 (61%) completed and returned the survey. The remaining 116 did not respond to the survey mailings or refused participation.

Eighty-one percent of the respondents were male. Seventeen percent graduated from medical school between 1942 and 1969, 48% between 1970 and 1984, and 35% between 1985 and 1996. Eighty-eight percent reported being board certified.

Responding physicians practiced in a variety of settings: solo practitioners (24.6%), small-group (two to five physicians) practices (23.7%), large-group (more than five physicians) practices (22.8%), hospital outpatient clinics (21.9%), and community health centers (7.0%). Respondents reported spending an average of 84% of their time in clinical practice and reported seeing an average of 4.4 adolescents per day, with 37% of these adolescent visits for routine or preventive care.

A comparison of respondents and nonrespondents revealed that female family physicians were less likely to respond than males (49% versus 64%, X²=4.4, P=.018). Nonrespondents were more likely to be less recent graduates than respondents (P=.016). The locations of the physicians’ practice sites (ie, MSAs) were similar in proportions between respondents and nonrespondents.

Guideline Familiarity

Overall, physicians reported having read an average of 5.5 of the 7 adolescent care guidelines. Table 1 displays the percentage of respondents who reported familiarity with each guideline (ie, a score of 3, 4, or 5 on the 5-point Likert scale, indicating they had read “some,” “most,” or “all” of the guideline. The percentage of respondents reporting familiarity ranged from a high of 79% who reported familiarity with the American Academy of Family Physicians Age Charts for Periodic Health Exam to a low of 3% reporting familiarity with the Maternal Child Health Bureau’s Bright Futures guidelines.

Delivery of Reproductive Health Preventive Services

On average, family physicians reported asking 79% of their adolescent patients about contraceptive use, 73% about condom use, 72% about sexual relationships, and 61% about sexual behaviors. Family physicians asked only 36% of teen patients about the situation in which the teen thought sex was appropriate, and only 30% of teen patients had their physician discuss sexual orientation with them. Family physicians discussed adolescents’ risks of HIV with 76% of adolescent patients and advised 78% to use condoms. Distribution of handouts was low, with family physicians giving material about HIV to 21% and material about condoms and/or condoms themselves to 9% of adolescent patients. On average, family physicians reported providing 5.5 of 8 recommended reproductive health-screening interventions to the patient seen during their last adolescent preventive visit.

A high percentage (76%) of family physicians report regularly discussing confidentiality with their adolescent patients and/or their patients’ parents. Family physicians who discuss confidentiality routinely reported screening and counseling adolescents for most sexual issues more often than physicians who do not (all P=.049). However, these two groups of physicians were no different with regard to the numbers of patients to whom they give educational handouts or condoms.

Fourteen percent of our sample physicians use a screening questionnaire with adolescents in their practice. Family physicians who use screening questionnaires also reported discussing condom use, contraceptive use, and HIV risks with more of their adolescent patients than those who do not use a questionnaire (all P=.042). Additionally, the physicians who used screening tools report giving more of their adolescent patients an educational handout on sexual responsibility and advising them about condom use (both P=.003).

Effects of Physician Factors on Delivery of Preventive Services

Gender. Significant associations were found between reproductive health services delivery and physicians’ gender. Female physicians were more likely than male physicians to report discussing all of the sexual issues mentioned in our survey with higher percentages of their
adolescent patients (P=.01), except for counseling and screening on sexual behavior (P=.225) and the situations in which sex is appropriate (P=.150). Female family physicians had a reproductive preventive care performance score that was significantly higher than that of male family physicians (76.5 versus 60.6, P=.0001).

Duration of Practice. Family physicians educated within the last 30 years (graduation years 1970 to 1996) reported that they provide recommended reproductive preventive care to the highest percentages of their adolescent patients. The oldest graduates had the lowest performance among the age groups (54.3, compared with 68.1 for the youngest and 63.5 for the middle group, P=.025). When controlling for other factors, the differences we found between gender and physician age remained significant (P=.05).

Multivariate Analysis. Using multiple linear regression with the performance index as the dependent variable, we examined the independent effects of demographic and practice factors associated with screening and counseling practices. These included physician gender and year of graduation, along with percent of adolescent visits devoted to preventive care, familiarity with and importance of different guidelines, use of a screening questionnaire, provision of confidential care, and the proportion of adolescent patients to whom the physician reported giving written HIV prevention educational materials.

Factors associated with provision of more preventive reproductive services included: regularly discussing confidentiality (P=.001), more recent medical school graduation (P=.014), placing a high value on the American Academy of Family Physicians (AAFP) recommendations (P=.038), having read Centers for Disease Control and Prevention (CDC) immunization guidelines (P=.001), having read American Academy of Pediatrics (AAP) guidelines (P=.041), and female gender (P=.042). Overall, these variables explained 26% (r2=.26) of the variation in counseling practices (Table 2).

When physicians thought their patients were sexually active, they were much more likely to provide reproductive health counseling and services than if they did not think their patients were sexually active. Such counseling involved discussions of contraceptive use (86.7% versus 32.1%, P=.0001), condom use (90.0% versus 49.1%, P=.0001), and STD risks (78.3% versus 58.9%, P=.024). Physicians who thought their last patient was sexually active were more likely to have asked that patient about condom use (91.7% versus 58.2%, P=.0001). They were also more likely to have performed a pelvic exam on female patients (35.3% versus 12.1%, P=.0001), to have performed STD screening tests (21.7% versus 5.4%, P=.001), and to have scheduled a follow-up appointment for the patient about reproductive health care issues (45.0% versus 18.5%, P=.003).

Discussion

The family physicians in our study reported discussing many reproductive health issues with most of their adolescent patients. However, they reported much lower rates of providing counseling on some of the more sensitive reproductive health topics, and few regularly provide patient education materials on sexual issues to their adolescent patients. Overall, despite recommendations that physicians screen and counsel all adolescents on sexual issues, fewer than half of the family physicians in our study discuss sexual orientation and responsibility and provide reproductive health-related patient education materials to their adolescent patients.

We found a number of practice-related factors that were associated with providers giving better reproductive preventive care to their adolescent patients. Gender, regularly discussing confidentiality with their patients, being more familiar with specific guidelines, and valuing the AAFP guidelines were all associated with physicians performing more-thorough reproductive preventive health care. Several of these factors are discussed here.

Confidentiality

It is noteworthy that discussing confidentiality with patients was associated with better counseling performance, as this finding has been reported before. Although prior studies have shown that physicians discuss confidentially with a minority of their patients,41-43 discussing confidentiality has been independently associated with increasing the comfort level of the patient. Establishment of a confidential relationship may contribute to greater willingness of patients to share information with their physician.36,44,45 While prior work

| Table 2 |
| Factors Predicting Greater Provision of Preventive Counseling and Screening for Reproductive Health Issues as Part of Family Physicians’ Usual Practice |
|----------------|-------------|
| Discussing confidentiality | .276 | <.001 |
| Having read CDC immunization guidelines | .231 | .001 |
| More recent medical school graduation | .183 | .014 |
| Placing a high value on the AAFP’s recommendations | .146 | .038 |
| Having read AAP guidelines | .143 | .041 |
| Female gender | .149 | .042 |

AAFP—American Academy of Family Physicians
CDC—Centers for Disease Control and Prevention
AAP—American Academy of Pediatrics
has found that female physicians discuss confidentiality with significantly more of their adolescent patients than do male physicians.\textsuperscript{32,40} Our findings demonstrate that discussing confidentiality has an independent association with the provision of reproductive counseling services, independent of physician gender.

**Practice Guidelines**

We found that familiarity with authoritative practice guidelines was associated with better delivery of reproductive preventive care. This is consistent with previous studies showing that a greater knowledge and acceptance of preventive care guidelines are the strongest predictors of compliance.\textsuperscript{26-28}

Many studies over the past few decades have documented that more-recently educated physicians have much higher rates of preventive care delivery.\textsuperscript{38} Our results support this finding, since younger family physicians reported the highest rates of providing screening, counseling, and guidance about reproductive health issues. These effects may be related to the trend in medical education toward an emphasis on preventive care and/or to other factors causing increased incentive to provide preventive care.\textsuperscript{31,38-40}

**Gender**

We found that female clinicians report providing substantially more reproductive health services to their adolescent patients. This finding is consistent with those reported for internists with adult populations and findings reported in other studies of adolescent care.\textsuperscript{7,23,29,30} Previous studies have suggested that differences in practice style associated with gender account for the observed variation in physician practice habits by gender. Female clinicians tend to be more comfortable and more prepared to manage adolescent sexual issues than males do.\textsuperscript{31,32} Female physicians also tend to hold a stronger belief in the effectiveness of preventive care, feel more personal responsibility for ensuring that their patients receive screening, and communicate more with patients than do male physicians.\textsuperscript{33,34} Hall et al also found that female internists conduct longer visits, make more positive statements, and make more partnership statements than do male physicians.\textsuperscript{35}

**Individual Patients’ Needs**

From our data on the report of the last adolescent preventive care visit, we found that the perceived need of the individual patient appears to be a strong factor motivating family physicians to spend time on reproductive preventive care issues. When physicians believed their patient was sexually active, they were much more likely to discuss sexual issues, provide counseling, and screen for contraceptive needs and condom use. This finding is comforting in that the patients who appear in most need of reproductive counseling seem most likely to receive it. However, it is distressing in that family physicians may be waiting to discuss reproductive health with their adolescent patients only after the patient is already sexually active. Our data highlights the need for family physicians to discuss sexual issues much earlier in their pediatric patients’ development, so that sex education and information is available to teens as they make decisions about future sexual activity.

**Limitations**

Our results are limited by the validity of self-report, since providers are likely to overreport provision of recommended preventive services.\textsuperscript{29} Therefore, the actual rates at which providers deliver reproductive counseling and services is likely lower than the rates reported by our respondents. However, previous studies have shown that self-reports of a single encounter or a specific scenario by providers tend to be more accurate than reports on typical practice patterns.\textsuperscript{41-45}

Other limitations include a possibility of selection bias, since providers who are interested in preventive care issues may have been more likely to respond to our survey. Lastly, the generalizability of this study is limited to family physicians in upstate New York and may not accurately represent other regions or other primary care clinicians.

**Conclusions**

Family physicians discuss sexuality with many of their adolescent patients and that performance is better for female physicians, younger physicians, and those familiar with practice guidelines. However, there is clearly room for improvement. Our findings suggest that better knowledge of current guidelines is associated with better preventive care practices. Overall recommendations for improving preventive reproductive health care might include the development of gender-specific strategies, encouraging physicians to read and consider consensus and organizationally endorsed guidelines and providing these guidelines directly to physicians. These actions may help encourage more family physicians to provide better reproductive preventive care to their adolescent patients.

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**Acknowledgments:** This paper was presented at the American Academy of Family Physicians 2000 Scientific Assembly in Dallas.

This study was supported by grant R01 HS08192 from the Agency for Health Care Research and Quality and by the Maternal Child Health Bureau.
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This paper received the first-place award for a research paper by a medical student at the American Academy of Family Physicians 2000 Scientific Assembly in Dallas. Dr Kelts was a medical student at the time the paper was submitted to the AAFP scientific papers competition.