Improving Rheumatologists’ Screening for Alcohol Use and Sexual Activity

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Objectives: To design, implement, and assess the impact of an office-based intervention designed to improve rheumatologists’ identification of risk behaviors, especially alcohol use and sexual activity, among adolescents and young adults with chronic rheumatologic conditions.

Design: Prospective intervention study.

Setting: Midwestern academic pediatric rheumatology practice.

Participants: Ten attending rheumatologists and fellows and 178 patients (mean age, 18.1 years; 67% female; 88% white; 69% with juvenile rheumatoid arthritis) seen in the practice during the baseline and intervention years.

Main Outcome Measures: Change in the rate of screening for alcohol use and sexual activity from the baseline to the intervention year, and physician perceptions of the intervention.

Results: Screening for alcohol use increased from 4.2% (9/208) at baseline to 31.6% (56/177) after the intervention (P < .001). Of those patients undergoing screening at follow-up, 20 (36%) of 56 patients reported any alcohol use and 11 (20%) reported current alcohol use. Of those reporting current use, 7 (64%) were counseled or referred. Methotrexate use increased the likelihood of alcohol screening (43% [33/76] vs 26% [23/87]; P = .02). Screening for sexual activity increased from 12.4% (27/218) to 36.2% (64/177) (P < .001) from baseline to follow-up. Of 52 females undergoing screening at follow-up, 31 (60%) were sexually active. Eleven (41%) of 27 sexually active females were not using contraception other than condoms (4 were not asked about contraception); 7 (82%) of these were referred for contraceptive counseling. Seven rheumatologists completed in-depth semistructured interviews after the intervention. All reported time as a main barrier to screening. Other barriers included logistical problems, discomfort with the subject area, ambivalence about whether risk behavior screening is the province of pediatric rheumatologists, and perceived lack of applicability to their patients.

Conclusions: Despite knowledge and concern about the interaction of immunosuppressive therapy and risk behaviors, few rheumatologists adequately screen the behavior of their adolescent and young adult patients. Time constraints, organizational issues, and physician beliefs remain barriers to widespread screening.


Therapeutic advances have improved the longevity and the quality of life of youth with chronic and disabling conditions. These same advances, however, often mean patients face increasingly complex and potentially hazardous medication regimens. About 40% of patients with juvenile rheumatoid arthritis (JRA) are prescribed second-line medications such as methotrexate. In addition to treating the chronic condition, subspecialists often provide the main or only source of ongoing care for these youths. Although many specialty organizations advocate joint care with primary care physicians, others, such as the American College of Rheumatology, have advocated that the rheumatologist assume responsibility for “principal care,” including preventive care, for patients with chronic rheumatologic illnesses.

Medications that may be teratogenic or that interact with alcohol or other substances necessitate pediatric subspecialists routinely screen adolescents receiving these medications for common adolescent behaviors such as substance use and sexual activity. Specialists who, by design or default, assume principal care for these patients have additional responsibility to provide preventive services, including anticipatory guidance. Further, since multiple studies demonstrate that
SUBJECTS AND METHODS

STUDY POPULATION

The study was conducted in a division of pediatric rheumatology in a large midwestern children's hospital. Patients aged 13 years or older (at the start of the baseline year) who had a defined chronic rheumatologic condition and who were seen at least once in the baseline year were eligible for inclusion in the study (N = 218). Defined conditions included JRA, systemic lupus erythematosus, dermatomyositis, scleroderma, and ankylosing spondylitis. All attending rheumatologists (n = 5) and rheumatology fellows (n = 5) participated in the study. All were male and white.

ASCERTAINMENT OF SCREENING

Clinical records of all rheumatology outpatient encounters in the 12 months preceding the intervention were reviewed by a trained nurse practitioner using a standardized protocol. Records were abstracted onto a coding form and double-entered into a database. Screening was defined broadly to include any mention in the chart (including patient self-report forms) of each of the screening topics. Intervention for a topic was defined as any chart indicator of in-office counseling or treatment or referral for related services. At the end of the 1-year study period, the charts were again reviewed using the same definitions and chart abstraction forms. The study was approved by the Institutional Review Board of Children's Hospital Medical Center, Cincinnati, Ohio.

INTERVENTION

A needs assessment had determined that adolescent interviewing skills, confidentiality concerns, clinic logistics, chart documentation, and uncertainty regarding referral resources were all barriers to screening for risk behavior in the clinic.

A series of 3 educational sessions used a combination of didactic presentations, role play, and interactive discussion. The topics included confidentiality and legal issues, general adolescent interviewing strategies, taking sexual and substance use histories, and indications for referral. All rheumatologists attended at least 1 session.

A chart reminder/documentation form was developed and placed prominently on the front of the chart for each eligible patient during the intervention year. If not completed during the visit, it was replaced at each subsequent visit. This form was designed to prompt physicians to inquire about each topic and to provide a rapid check-box method of documentation. The original form contained information on pubertal development, sexual issues, substance use, exercise, diet, safety, school, and mental health. After 6 months of use, interim feedback and analysis determined that the original 2-page form contained too many topics to be feasible. We believed that some topics, eg, depression, physical activity, and school, were well addressed by other clinic providers (eg, social workers, physical therapists) and were dropped. The final form contained only those topics believed to be most important for the rheumatologist to address, ie, pubertal development, substance use, and sexual issues. (Forms are available from the authors on request.)

POSTINTERVENTION INTERVIEWS

To assess physicians' experience with the intervention, we attempted to conduct semistructured interviews with all physician participants after the 1-year intervention. Seven of 10 rheumatology attending physicians and fellows completed the interviews. Three individuals were not interviewed because they had left the institution or because a time for the interview could not be arranged. The interviews were conducted individually by an independent consultant not affiliated with the intervention. Interviews lasted 35 to 45 minutes and were audiotaped and summarized by the consultant. The major topics included practical experience with screening, responses to positive findings, and barriers to and benefits of screening.

DATA ANALYSIS

Outcome Variables

The main outcome variables were the changes in the rate of screening for sexual activity and alcohol use from the year preceding the intervention (baseline) to the intervention year. Secondary outcomes included change in rate of screening for other behaviors (eg, cigarette use, marijuana use, suicide and/or depression, school problems, nutrition, and exercise) and the change in rate of documented intervention for alcohol use and sexual activity.

Power Analysis

We considered a 20% absolute increase in screening to be a minimum clinically significant effect. We estimated 10% of the charts would have evidence of screening for sexual issues and alcohol use at baseline, and that the intervention would increase that rate to at least 30%. With an alpha error of .05, we required 97 patients to have a 90% chance of detecting an increase in screening from 10% to 30%.

Statistical Approach

Descriptive statistics were generated for each dependent variable at baseline and after the intervention. The McNemar test was used to determine whether there was a significant difference in the rate of screening for each behavior between the baseline and postintervention periods.

Separate bivariate analyses were used to explore the association between screening for alcohol use and sexual activity after the intervention and each of the following variables: patient age, sex, race, number of visits to the rheumatologist in the preceding 12 months, diagnosis, presence of a known primary care provider, medication use (any, methotrexate, cyclophosphamide, or cyclosporine), and provider identity. Providers were coded using dummy variables. We used chi-square analysis for categorical variables and t tests for continuous independent variables.

Independent variables significantly associated with screening in the bivariate analyses were then entered into logistic regression models to determine factors independently associated with screening for alcohol use and sexual activity. Results of the logistic regression analyses are expressed as adjusted odds ratios and 95% confidence intervals, using Cornfield approximations. All analyses were conducted using commercially available software (STATA 5.0; STATA Corp, College Station, Tex).
most adolescents with severe chronic conditions report their subspecialist as their main or only source of ongoing health care, efforts to improve identification of and intervention for high-risk behaviors in this population must include subspecialists.

Previous research at our institution revealed that 31% of adolescents with JRA reported alcohol use in the year preceding the study, including 24% to whom methotrexate had been prescribed. Only 27% of study participants reported that they were ever interviewed by the rheumatologist without their parents present. Since confidentiality is needed for high-quality screening for risk behavior, the lack of adolescent time alone with these rheumatologists suggests that few appropriate opportunities were available to undertake screening or intervention for risk behaviors.

Studies in chronically ill and general adolescent populations have documented that adolescents infrequently receive comprehensive anticipatory guidance or risk-factor screening. Physicians cite forgetfulness, patient refusal, and practice logistical difficulties as the primary reasons for not performing preventive services. Office system interventions such as physician education, chart reminders, checklists, and audit with feedback have demonstrated moderate success in improving screening rates for a variety of conditions. In general, reminder systems, including checklists and flow sheets, have been more efficacious than physician education or reminder systems, including checklists and flow sheets, that were associated with screening in the postintervention period.

### Table 1. Changes in Screening From Before to After Intervention

<table>
<thead>
<tr>
<th>Condition</th>
<th>Patients, %</th>
</tr>
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<tbody>
<tr>
<td>Female</td>
<td>67</td>
</tr>
<tr>
<td>White race</td>
<td>88</td>
</tr>
<tr>
<td>JRA</td>
<td>69</td>
</tr>
<tr>
<td>Systemic lupus</td>
<td>15</td>
</tr>
<tr>
<td>Dermatomyositis</td>
<td>7</td>
</tr>
<tr>
<td>Scleroderma</td>
<td>2</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td>8</td>
</tr>
</tbody>
</table>

The median number of visits in the baseline year was 3 (range, 1-27), whereas the median number was 4 (range, 1-32) in the intervention year.

Screening for substance use and sexual activity increased significantly with the intervention (Table 1). Screening for cigarette use increased the most, with an absolute increase of 28.1%, followed by screening for pubertal development (+27.9%) and alcohol use (+27.4%). Declines were seen in the proportion in whom a menstrual history was taken (−8.3%) and screening for depression (−18.2%), nutrition (−20.7%), and exercise (−6.1%). These changes were all statistically significant except for that of taking a history of contraceptive use among sexually active females (+14.6%; P = .28).

At baseline, all 7 patients reporting current alcohol use and 17 (89%) of those reporting sexual activity without contraception were counseled or referred. The proportion with positive results of screening for alcohol use and sexual activity after the intervention are summarized in the following tabulation:

### Results

#### Screening

One hundred seventy-eight patients were seen at least once in the baseline and in the intervention years. Mean age at baseline was 18.1 years. Other participant characteristics are summarized in the following tabulation:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Patients, No./Total No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever used alcohol</td>
<td>20/56 (36)</td>
</tr>
<tr>
<td>Current alcohol use</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>11/56 (20)</td>
</tr>
<tr>
<td>Prescribed methotrexate</td>
<td>5/33 (15)</td>
</tr>
<tr>
<td>Counseled or referred</td>
<td>7/11 (64)</td>
</tr>
<tr>
<td>Sexually active (females only)</td>
<td>31/52 (60)</td>
</tr>
<tr>
<td>Not using contraceptives other than condoms</td>
<td>11/27 (41)</td>
</tr>
<tr>
<td>Referred for contraceptive counseling</td>
<td>9/11 (82)</td>
</tr>
<tr>
<td>(not using contraception)</td>
<td></td>
</tr>
</tbody>
</table>

The data on referral for sexual activity are reported for female patients only, since the rheumatologists believed that unprotected sexual activity among male patients was less of a concern from a medication and teratogenicity standpoint and that it was unlikely they would refer a male patient. Four of the 31 sexually active females were not asked about contraception. Only 12 (21%) of 56 males underwent screening for sexual activity. Although the absolute number of patients counseled or referred increased with the intervention, the proportion with positive screening results who received an intervention actually declined.

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FACTORS ASSOCIATED WITH SCREENING

Although the rates of screening for sexual issues and alcohol use increased dramatically with the intervention, most patients still did not undergo screening for these topics. We therefore analyzed patient, physician, and health care utilization factors associated with screening. The following variables were significantly associated with screening for alcohol use: the number of visits (average, 5.4 vs 3.4 among those not undergoing screening; \( P < .001 \)), patient race (29% [45/157] of whites vs 55% [11/20] of blacks undergoing screening; \( P = .02 \)), use of any prescribed medication (35% [56/159] vs 0% not taking medication; \( P = .002 \)), and use of methotrexate (43% [33/76] vs 26% [23/87] not using methotrexate; \( P = .02 \)). Rates of screening among providers ranged from 0% to 100% (\( P = .004 \)). Providers at the extremes saw few patients. Patient age, sex, diagnosis, presence of a documented primary care provider, and use of cyclophosphamide or cyclosporine were not associated with alcohol screening. In the multivariable analysis (Table 2), only provider identity and increasing number of visits remained as significant predictors.

Multiple factors were associated with screening for sexual activity in the bivariable analyses. Older (19.5 vs 18.0 years; \( P = .008 \)), female (43% [52/121] vs 21% [12/56] male patients; \( P = .004 \)), and black patients (65% [13/20] vs 33% [51/157] of white patients; \( P = .004 \)) were more likely to undergo screening. More visits (3.2 for screened vs 3.4 for unscreened; \( P = .003 \)) and prescription medication use (40% [63/159] vs 6% [1/18] not using medication; \( P = .004 \)) were also associated with screening. Rates of screening for sexual activity among individual physicians ranged from 0% to 51% (41/80) (\( P = .001 \)). Presence of a documented primary care provider and prescription of methotrexate, cyclophosphamide, or cyclosporine were not significantly associated with screening. In the multivariable analyses, black race, female sex, provider identity, older patient age, and increasing number of visits were independently associated with screening.

PHYSICIAN INTERVIEWS

Five attending rheumatologists and 2 rheumatology fellows completed the in-depth interviews. They reported that approximately 20% to 30% of their patients met age criteria for the screening protocol. The rheumatologists followed a procedure of obtaining a general gestalt of the patient’s level of risk taking before a decision was made to undertake screening. Factors related to the patient’s presentation that influenced their impression were manner of dress, extent of school delinquency, mode of interaction with parents, family cohesion, and level of conservatism of the family. In addition to this general risk assessment, a decision to pursue screening also was influenced by the length of time the physician had known the family and the level of risk associated with the medicines (i.e., methotrexate and cyclophosphamide) that the adolescent or young adult was taking. Most physicians believed that a longer relationship was associated with more comfort with the patient in talking about sensitive issues, but 1 physician experienced the impact of the length of the relationship in the opposite direction (i.e., he was least comfortable with patients he had known the longest). Respondents reported they were more likely to screen younger patients because they were perceived to be entering the age of adolescent experimentation. One physician who did not screen at all believed strongly that he would be interfering with the parent-child relationship if he engaged in inquiries regarding risky behaviors.

When potential barriers to screening were discussed, all of the physicians reported time as a major barrier. One commented: “We need to be focused during our interviews due to time constraints. Even if we desire to adopt screening, we only have the time to address 1 or 2 issues per visit.” A second difficulty was asking the parent to leave the room. This was particularly true when the patient had severe disease and was, therefore, deemed more dependent on the parent. In addition, although all of the physicians had attended at least 1 educational session, many felt uncomfortable discussing topics such as sexual activity or believed that it resulted in discomfort on the part of parents or patients.

Of those who screened for sexual activity or alcohol use, the rheumatologists believed that from 2% to 10% yielded a positive finding. Positive results of screening usually were handled by counseling regarding the risk of medication and the use of other substances or by referral to adolescent medicine specialists. In general, the physicians recognized the importance of addressing these issues by themselves or by a primary care provider. They felt positively about the role of this intervention in raising their awareness of these issues. The documentation form was reported to be helpful as a reminder to screen and as an aid to documentation. One provider commented: “Oftentimes we address these issues, but we don’t dictate or document.” However, they did not feel very positively about the likelihood of making an impact. They viewed adolescent risk taking as normative and described some negative experiences in their efforts to prevent pregnancy or sexually transmitted infections.

Some physicians believed that, optimally, patients should undergo screening by their general practitioner or pediatrician. However, they reported that, in reality, many of the patients and their families regard the rheumatologist as their primary care provider. Several phy-

Table 2. Associations With Screening After the Intervention*

<table>
<thead>
<tr>
<th></th>
<th>AOR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol use</td>
<td></td>
</tr>
<tr>
<td>Provider identity (vs highest)</td>
<td>0.23 (0.11-0.49)</td>
</tr>
<tr>
<td>Number of visits†</td>
<td>1.19 (1.06-1.34)</td>
</tr>
<tr>
<td>Black race§</td>
<td>2.53 (0.86-7.45)</td>
</tr>
<tr>
<td>Methotrexate use</td>
<td>1.92 (0.92-4.03)</td>
</tr>
<tr>
<td>Sexual activity</td>
<td></td>
</tr>
<tr>
<td>Provider identity (vs provider with highest rate)†</td>
<td>0.27 (0.12-0.58)</td>
</tr>
<tr>
<td>No. of visits†</td>
<td>1.17 (1.02-1.31)</td>
</tr>
<tr>
<td>Black race†</td>
<td>3.60 (1.15-11.27)</td>
</tr>
<tr>
<td>Female†</td>
<td>2.38 (1.03-5.50)</td>
</tr>
<tr>
<td>Older age†</td>
<td>1.20 (1.07-1.34)</td>
</tr>
</tbody>
</table>

* AOR indicates adjusted odds ratio; CI, confidence interval.
† \( P < .05 \).
Physicians stressed that it is easier to counsel their long-term patients. Others identified that parental support and involvement is needed.

All physicians were asked if, in their opinion, screening for these behaviors is the responsibility of medical professionals. Many responded that it should involve a team approach, including primary care physicians, nurses, and subspecialists. One or two physicians strongly believed that it should not be a responsibility within the domain of the subspecialist: “I don’t know how much of our time we should be spending on screening; are we using our professional time optimally?” Another stated that he would rather put his energies into finding a primary care provider for a patient than adopt the role for himself. Others disagreed: “It is important that we do it.” Another commented: “Ideally, the primary care provider would handle it, but we ARE primary care.”

With a single exception, physicians agreed that screening, at least for patients prescribed medication, should be adopted as routine clinical practice. However, most reported that system level changes, such as adding previsit questionnaires, changing the visit structure, or adding nurse practitioners would be required to make risk behavior screening truly part of routine care. Only 1 physician thought that additional physician education or training would be helpful.

The multidimensional intervention dramatically improved rates of screening for substance use and sexuality-related issues. Nonetheless, more than 50% of the patients still did not undergo screening. Substance use and sexuality were the main targets of the intervention. In response to physician feedback, the screening forms were amended midyear to concentrate on these issues. Other topics, including nutrition, physical activity, school, and depression, were dropped from the screening forms. These areas were screened for by the rheumatologists at lower rates during the intervention than in the previous year. This finding suggests that, given time limitations, physicians trade off discussing preventive topics. Given the previous very low rate of screening for substance use and sexual issues in this population, this may be an appropriate trade-off. Care must be taken, however, to monitor for undesired effects of such screening programs, such as declines in screening for mental health or physical activity that is also important for this population. In this multidisciplinary clinic, other health care providers, such as social workers, often screen for these topics. Thus, the trade-off in physician screening may not have had deleterious effects.

Not surprisingly, there were wide variations in the rate of screening between individual physicians for substance use and sexual topics. Providers with extreme rates tended to be those who saw few adolescent or young adult patients. For both topics, there was a trend toward screening in older patients, although it was significant in the multivariable analysis only for sexuality screening. This finding was in conflict with the physicians’ impression that they screened younger patients more frequently. As expected, use of any medication, and specific use of methotrexate, were associated with screening. The lack of statistical association with cyclophosphamide or cyclosporine may result from the smaller number of patients prescribed cytotoxic medications. The physicians perceived they screened nearly all patients prescribed these drugs. Physicians were also more likely to screen black patients than white patients, although in the multivariable analysis, the effect was significant only for sexual issues. This suggests that providers perceived black patients to be at higher risk for these behaviors. The accuracy of these perceptions is unknown, since the rates are only available for those patients who actually underwent screening.

Physicians also underestimated the proportion of patients with positive screen results. They estimated that only 2% to 10% of inquiries yielded a positive finding, yet their chart documentation revealed that positive findings ranged from 15% for alcohol use among patients prescribed methotrexate to 60% for sexual activity among female patients undergoing screening. Although it is possible that negative results were less likely to be recorded, this would have needed to be a very large number to account for the disparity between the perceived and recorded positive screens. Physicians overestimated the proportion of patients prescribed methotrexate who underwent screening. It is again possible that negative results were not recorded or that patients had undergone screening in previous years but not during the intervention year. Given the rapid changes in adolescent development and behavior, it seems prudent that adolescents prescribed these medications undergo screening at least annually, if not at every visit.

Physicians reported significant ambivalence about screening for sensitive adolescent behaviors. They expressed concern about possible negative impact on the physician-family relationship and on the quality of rheumatologic care. Information from the physician interviews in this study must be interpreted with caution. They represent the experience and attitudes of a small number of physicians at a single institution. Nonetheless, their ambivalence regarding the scope of care and role of the pediatric rheumatologist is concerning, given that they often are the main source of care and that they frequently prescribe potentially toxic medications.

Studies of adolescents and parents in the general population have demonstrated that families want physicians to address concerns such as substance use. A few studies with adult rheumatology populations also report that patients desire information and advice regarding sexual topics. To our knowledge, no published studies have addressed the specific needs of adolescents with rheumatologic conditions and their families. Future work should investigate the needs and preference of adolescents with rheumatologic and other chronic conditions for risk behavior screening and other preventive health measures. In addition, logistical and attitudinal barriers must be addressed to promote the highest quality of care for adolescents and young adults in the pediatric subspecialty setting. Previsit confidential screening questionnaires, such as those developed for the American Medical Association Guidelines for Adolescent Preventive Services program, may help focus the physician counseling session and thus reduce the time...
problem. Other possible solutions include increased use of advanced practice nurses for screening adolescents in subspecialty clinics or increasing patients' connections with primary care physicians.

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