

Condom Use as a Function of Time in New and Established Adolescent Sexual Relationships

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Relationship characteristics exert strong influences on condom use.^{1–4} Intimacy, mutual trust, and presumed fidelity are elements of sexual relationships that influence condom use,^{5–9} contributing to lower rates of use in established relationships than in new relationships.^{10,11}

The time required for a “new” relationship to become an “established” relationship in terms of condom use is therefore an important issue for prevention of sexually transmitted diseases (STDs). The objective of this study was to establish the length of time required for adolescent women to fail to use condoms on a consistent basis.

METHODS

Between the years 1995 and 1999, 172 women (age range = 13–22 years, mean = 17.6 years) were recruited from STD and primary care adolescent health clinics in Indianapolis, Ind. Participants were enrolled as a result of infection with *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, or *Trichomonas vaginalis* or as a result of sexual contact with infected partners. Completion of diary forms was requested for each day in which coitus occurred. Codes were used to indicate coitus, partner initials, and condom use. Diaries were collected at scheduled clinic return visits over a 7-month period. Informed consent was obtained, and the study was approved by the Institutional Review Board of Indiana University/Purdue University at Indianapolis.

Coital events were analyzed on the basis of runs of sexual partners,^{12,13} defined as uninterrupted sequences of coital events (not necessarily on successive days) with a specific partner. A new run began each time a partner change occurred, even if the partner had been identified in an earlier run. Participants with one partner contributed one run. Number of runs did not necessarily equal number of partners, because multiple runs

Objectives. This study sought to describe condom use over time in new and established adolescent relationships.

Methods. The outcome variable was time (in days) until first unprotected coital event. Analyses involved comparisons of Kaplan–Meier survival curves and Cox proportional hazards models.

Results. Survival functions for the 2 relationship groups were significantly different. However, by 21 days the curves had converged: 43% of new and 41% of established relationships involved no unprotected coital events. Time to first unprotected coital event was significantly longer in new than in established relationships.

Conclusions. Prolongation of condom use in ongoing relationships may be a useful intervention to prevent sexually transmitted diseases. (*Am J Public Health.* 2002;92:211–213)

could be associated with the same partner. A “new” partner was defined as one not identified in any earlier run of a given participant. An “established” partner was defined as a partner associated with any previous run.

The sample consisted of 106 subjects with 359 runs (133 runs with established partners and 226 runs with new partners). The beginning of each run was used as the time origin. An unprotected coital event that occurred before the end of the run represented the “failure time.” If the initial coital event of a run did not involve use of a condom, no additional events were contributed by that run. If no unprotected coital events occurred before the end of the run, the failure time for that run was censored. All observations were censored at 30 days because of the scarcity of data beyond that point.

Considering the first unprotected coitus in each run as a “failure,” we calculated survival functions for new and established partners using Kaplan–Meier estimates.¹⁴ We compared survival curves using Wilcoxon tests.

Cox proportional hazard models for correlated survival data were used to control for multiple runs contributed by a single subject.¹⁵ Within-subject runs were treated as correlated with standard errors of parameter estimates obtained via a jackknife method. The robust version of the Wald test was used

to assess differences in time elapsed before first unprotected coitus in new and established relationships.¹⁵ Level of statistical significance was set at $P < .05$.

RESULTS

Data on participants’ sexual behaviors at enrollment are shown in Table 1. The average diary length was 126 days (range: 25 to 266 days). Participants reported 3248 coital events, of which 1368 (42%) involved use of a condom.

More first coital events in runs associated with new partners (66%; 149/226) than in runs associated with established partners (54%; 72/133) involved use of a condom. Of runs involving new partners, 27% (61/226) were single sexual encounters. Protected coital events decreased in new relationships to the point that, by 21 days, condom use in new relationships was indistinguishable from that in established relationships (43% and 41%, respectively).

Kaplan–Meier survival curves showed that, in comparison with condom use rates in established relationships, rates in new relationships were initially higher and declined more rapidly (Wilcoxon test, $P < .03$; Figure 1). Similar results were obtained with a Cox regression model adjusted for clustered survival data (robust test statistic = 3.97, $P < .05$, with 1 degree of freedom).

TABLE 1—Sexual and Contraceptive Behaviors, at Enrollment and From Coital Diaries: Indianapolis, Ind, 1995–1999

| | Mean | SD | Range |
|---|------|------|-----------|
| Enrollment | | | |
| No. of sexual partners, lifetime | 10.5 | 28.3 | 1-350 |
| No. of sexual partners, past 2 months | 1.3 | 0.8 | 0-6 |
| No. of coital events, past 2 months | 10.2 | 23.2 | 0-240 |
| Condom-protected events, %, past 2 months | 42.0 | 40.0 | 0-1.0 |
| Diaries | | | |
| No. of sexual partners | 1.9 | 2.4 | 1.0-20.0 |
| No. of runs | 2.7 | 4.8 | 1.0-37.0 |
| No. of coital events | 19.0 | 28.5 | 1.0-212.0 |
| Condom-protected events, % | 56.0 | 39.0 | 0-100 |

DISCUSSION

The present results show that condom use rates were higher in new than in established relationships but declined to levels similar to those of established relationships over a 21-day period. In condom usage terms, a new relationship required somewhat less than a month to become an established relationship.

These data are in accord with other studies demonstrating the influence of relationship

characteristics on adolescent condom use. Ku et al. proposed a “sawtooth” pattern of condom use within and across relationships.¹⁶ There are probably several reasons why condom use rates differ according to relationship characteristics. For example, higher levels of perceived STD risk are reported in new relationships.¹⁷ Perceived risk decreases because of increased knowledge about the partner, although perceptions regarding sex partner behaviors are often inaccurate.¹⁸

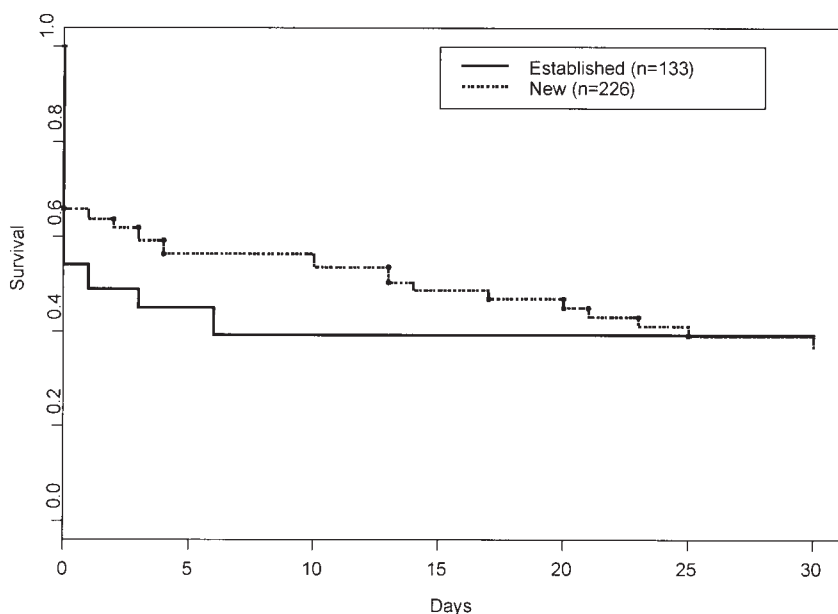


FIGURE 1—Number of days to first condom nonuse: established and new relationships (Kaplan-Meier survival curves; $P < .05$ by Wilcoxon test).

Passage of time may also reduce perceived risk and rates of condom use as a result of extrapolation of immediate past experience (i.e., because there are no signs of sexually transmitted infection, infection is not possible).¹⁹ Motivations for sex shift within relationships over time, with issues of trust and intimacy receiving greater priority in ongoing relationships.²⁰

The present data should be evaluated in light of several caveats. The initial analysis may not have accounted fully for correlations among runs contributed by individuals with both new and established partners. However, we obtained similar results when we used a Cox regression model that adjusted for multiplicity of runs contributed by each participant.

Another consideration is the fact that only the initial occurrence of a nonprotected coital event was considered as an endpoint. Occasional condom nonuse may be interspersed in a pattern of consistent condom use, and such patterns may represent a degree of STD protection. In fact, commonly used ordinal measures of condom use almost certainly misclassify occasional nonuse, grouping such events in a category indicating that condoms are “always” used.²¹

Our results show that, typically, condom use is discontinued in relationships before the duration of infection of most STDs has elapsed. Practical interventions for adolescents might include advice to prolong consistent condom use beyond 3 weeks of a presumably sexually exclusive relationship and consideration of STD screening before cessation of condom use. ■

About the Authors

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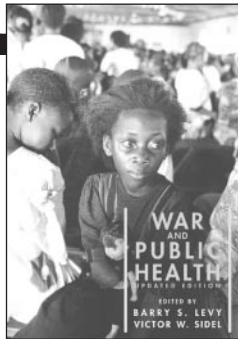
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Contributors

J.D. Fortenberry and D.P. Orr contributed to all aspects of study design, data collection, and manuscript preparation. W. Tu, J. Harezlak, and B.P. Katz contributed to data analysis and manuscript preparation. All of the authors critically reviewed the manuscript for content and accuracy.

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