Adverse Health Behaviors and the Detection of Partner Violence by Clinicians

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Background: Intimate partner violence (IPV) is a major public health problem in the United States, and victims are commonly encountered in medical settings. Many barriers exist to clinician-initiated screening for IPV. However, smoking and problem drinking are conditions that clinicians commonly screen for and both have been strongly associated with IPV in prior studies. By estimating the predicted probability of 12-month and lifetime IPV for a given patient based on whether she presents with these conditions, our study gives clinicians information that can help them identify patients at risk for IPV.

Methods: A cross-sectional written patient survey was administered to 2386 female patients at 8 different health care settings in the Greater Boston (Mass) metropolitan area. The probabilities of 12-month and lifetime IPV were estimated based on the women's self-report of smoking and drinking behaviors.

Results: A woman who neither smoked nor engaged in problem drinking had a 10% probability of IPV in the preceding 12 months and a 39% chance of IPV in her lifetime. Smoking increased the probability to 14% and 49%, respectively. Problem drinking resulted in a doubling of the predicted probability of 12-month IPV to 21%, with a lifetime probability of 43%. When both conditions were present, the effects were additive, with a woman having a 27% probability of experiencing IPV in the preceding 12 months and 54% chance of IPV in her lifetime.

Conclusions: The presence of smoking or problem drinking should raise clinicians' suspicion for IPV. This paradigm should not replace direct questioning about IPV but may aid in the detection of abuse in patient populations.

Arch Intern Med. 2005;165:1016-1021

INTIMATE PARTNER VIOLENCE (IPV) is a major public health problem in the United States. An estimated 1.5 million women are assaulted annually by an intimate partner, and 25% of women report a lifetime history of partner abuse. Victims are commonly seen in medical settings and rates vary by specialty. In emergency departments, 11% to 19% of women report IPV in the past year, and rates as high as 54% have been reported for lifetime abuse. In adult primary care settings, estimates for 12-month rates vary from 5.5% to 22.7%, while lifetime rates range from 28% to 38.8%. In obstetrics and gynecology practices, 4% to 15% of women report recent IPV. Studies of mothers in pediatric offices yield estimates of 2.5% for current abuse, 17% over the prior 2 years, and 13% to 16.5% for lifetime prevalence.

Despite the high prevalence of IPV in medical settings, universal screening for IPV remains controversial. Most recently, the US Preventive Services Task Force, citing limited data as to whether interventions reduce harm to women, has stated that insufficient evidence exists to support screening for IPV in medical settings. Conversely, screening in medical settings has been endorsed for tobacco use and problem drinking. Inquiry for these conditions appears to be common practice among clinicians. Physicians exhibit greater comfort with screening for tobacco and alcohol use than they do for IPV. Yet, IPV is arguably as much a threat to women's health as these other conditions are. Women who have experienced IPV exhibit heightened levels of chronic pain and psychiatric disorders as well as greater health care utilization. The most extreme health effect of IPV is mortality: American women are killed by intimate partners more often than by any other type of perpetrator.

See also pages 986 and 1022
cial phenomenon. Yet, despite the prevalence of IPV, inquiry is still not routine in many medical encounters.

Prior work has established strong associations between adverse health behaviors and IPV. In population-based studies, women who smoke were twice as likely to report IPV. Among smokers, women who exhibit symptoms of greater nicotine dependence report more recent violence, suggesting a possible dose-response relationship. Women who have experienced IPV are more likely to engage in problem drinking. While it has been argued that alcohol and substance use may place women at higher risk of victimization, there is also evidence that alcohol use may increase in response to abuse. Alcohol and substance use have been demonstrated to increase from a baseline level when exposure to new abuse occurs. In one population-based study, women experiencing IPV had nearly 5 times the odds of problem drinking than non-abused women. A similar trend is noted in medical settings. In an inner city emergency department, women physically abused by a partner during the past year exhibited higher alcohol abuse scores on a standardized instrument than nonabused women.

Building on these well-established associations between IPV, smoking, and problem alcohol use, we sought to use these associations to help clinicians detect IPV in clinical settings by drawing on information they are already routinely gathering. Using data from a large, multicenter study of IPV in different medical specialties, we developed a model to estimate the predicted probability that a given patient who reports tobacco use or problem drinking will have experienced IPV either in the past 12 months or in her lifetime.

METHODS

SAMPLING PROCEDURE

The study used a survey sampling design with 2 levels: convenience sampling of hospital departments and systematized randomized sampling of periods during which all patients were surveyed. Data were collected in different departments of 7 Boston (Mass) metropolitan area hospitals and 1 freestanding gynecology clinic. Three of the hospitals were tertiary care centers; the other 4 were community hospitals. Patients were surveyed in emergency (n=4), obstetrics and gynecology (n=3), adult primary care (n=2), and pediatrics (n=2) departments of the participating institutions. The study met approval of the institutional review boards of all the participating institutions.

PATIENT SURVEY METHODS

Female patients were surveyed in the waiting rooms of each site over a mean (SD) period of 7.6 (4.7) months. Only women self-identifying as patients were given the written survey. Surveys were administered during predetermined blocks of time spanning mornings and afternoons, Monday through Friday, and some evenings and weekend days. Fifty-eight trained research assistants distributed the surveys, with no fewer than 2 different research assistants assigned to each department to reduce the potential for surveyor bias. Ninety percent of the surveys were completed in English; however, the survey was also offered in other languages including Spanish, Chinese, and Russian. Potential study participants were given a cover page listing possible risks and benefits as informed consent and were told they could choose not to complete the survey.

The women approached were informed that the survey was designed to examine stress and health and was anonymous unless they chose to participate in future follow-up studies. They were also told their responses would remain confidential and would not be shared with their health care providers. Research assistants maintained records on how many women were approached and accepted the survey, whether they were accompanied in the waiting room, language barriers, and apparent reasons for refusal.

RESPONSE RATES

A total of 4802 women patients were present in the waiting rooms during the survey periods. Of these, 87% (N=4196 women) were approached. Women were not approached if they were called to their appointment immediately, were completing visit-related paperwork, or appeared too ill. Criteria for deeming a patient too ill to participate included active vomiting, bleeding or clear signs of extreme distress, or pain as judged by a nonmedically trained research assistant. The proportion of women approached varied by department type. A smaller percentage of women were approached in the emergency departments (84%) because more of these women were acutely ill or taken to examination rooms for immediate treatment.

Of those who were approached, 57% (n=2386) completed the survey. Acceptance rates ranged from 51% in emergency departments to 72% in obstetrics-gynecology practices. The most common reasons for refusal were feeling poorly, lack of interest, or a language barrier. The survey took 5 to 7 minutes to complete and included measures of sociodemographic data, 12-month and lifetime rates of IPV, health status, stress, and questions regarding tobacco and alcohol use.

MEASUREMENTS

Intimate Partner Violence

Exposure to IPV in the preceding 12 months and during the lifetime was measured using 10 items. The first 6 items from the Severity of Violence Against Women Scale (SVAWS) measured exposure to IPV in the preceding 12 months.

SVAWS Items

In the last 12 months, how often has a partner (circle one: never/rarely/sometimes/fairly often/very often):
- Threatened to hurt you?
- Pushed or shook you?
- Slapped you around your face and head?
- Punched you?
- Threatened you with a gun?
- Physically forced you to have sex?

The latter 4 items from 2 instruments previously validated in medical settings measured lifetime exposure to IPV.

Lifetime Violence Items

At any time in your life has any partner:
- Hit, slapped, kicked or otherwise physically hurt you?
- Accused you of having sexual activities?
- Made you feel stressed or afraid through threats, or violent behavior?
- Made you fear for your safety during arguments?

High reliability was demonstrated for both sets of questions with Cronbach α coefficients of α=0.88 for the 12-month IPV items and α=0.85 for the 4 lifetime items. In response to the latter 4 items women were asked to report the most recent date of the violent incident ("If you an-
answered yes, in the table above, when was the most recent incident? If she recorded a date that fell in the preceding 12 months, she was classified as being exposed to 12-month IPV, even if she had not endorsed any of the first 6 items on the questionnaire. If a woman endorsed any 1 of the 10 items, she was classified as having been exposed to lifetime IPV.

**Tobacco**

For tobacco use, a dichotomous variable was created for subjects who smoke and those who do not. The question “In the last 2 weeks, how many cigarettes have you smoked per day?” was used to ascertain smoking status. If the respondent reported smoking any cigarettes, she was considered a “smoker.”

**Alcohol**

Participants reported the frequency of alcohol intake using a question from the Alcohol Use Disorders Identification Test questionnaire ("During the past 30 days, how often did you drink 4 or more drinks of alcohol on a single occasion?"). The screen is intended to detect hazardous drinking behavior. Concern for harmful drinking occurs when a women has more than 3 drinks per occasion or more than 7 drinks per week. We categorized women who answered “never” or "less than monthly" as nondrinkers or moderate drinkers and those who answered “monthly,” “weekly,” or “daily” as potentially problem drinkers.

**Other Covariates**

Age was used as a continuous variable in the estimation models; a categorical breakdown is given in Table 1. Education status and race were also included in the model to control for any potential confounding. Several ethnic groups had small sample sizes in our population; these were aggregated into an “other” category. Among these were Native Americans and South Asian women who tend to have high rates of IPV. We believed it was important to include these women in the study despite small numbers. Because the health care sites where we surveyed were located in disparate urban and suburban areas, controlling for site was necessary and served to control for residual confounding caused by unmeasured socioeconomic factors. Marital status was also included in the model. Depression is commonly found in women who have experienced IPV and has also been linked to smoking and problem drinking. We therefore controlled for depression in our estimation models. Women’s depressive symptoms were measured by a mean score on a scale of 0 to 4 on 2 questions (“Have you felt downhearted and depressed? Have you felt calm and peaceful?”) from the Medical Outcomes Study 12-Item Short Form Health Survey (SF-12). A mean depressive symptoms score was computed from the 2 items and used in regression analyses as a continuous variable; higher scores represented greater depressive symptoms (Table 1). Previous studies have found that single items from the SF-12 mental health inventory do detect depression when validated against established diagnostic instruments.

**DATA ANALYSIS**

**Logistic Regression**

Two separate logistic regression models were estimated. The dependent variable in the first model was 12-month (recent) IPV. Lifetime IPV was the dependent variable in the second model. All models were adjusted for age, race, educational level, marital status, health care site, and depressive symptoms. Given

### Table 1. The Relationship Between 12-Month and Lifetime Intimate Partner Violence (IPV), Sociodemographic Variables, and Behavioral Health

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Estimated No.</th>
<th>Overall</th>
<th>12-mo IPV</th>
<th>Lifetime IPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2386</td>
<td></td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>663</td>
<td>28</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Problem drinking</td>
<td>837</td>
<td>35</td>
<td>24</td>
<td>50</td>
</tr>
<tr>
<td>Depressive symptoms score, mean (SD)</td>
<td>1.75 (0.87)</td>
<td>1.76 (0.845)</td>
<td>1.84 (0.855)</td>
<td></td>
</tr>
<tr>
<td>Age, y (mean = 35 years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-23</td>
<td>523</td>
<td>22</td>
<td>17</td>
<td>43</td>
</tr>
<tr>
<td>24-29</td>
<td>524</td>
<td>22</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>30-34</td>
<td>329</td>
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<td>50-59</td>
<td>220</td>
<td>9</td>
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<td>42</td>
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<td>≥60</td>
<td>131</td>
<td>6</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Race</td>
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<td>32</td>
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<tr>
<td>Other‡</td>
<td>148</td>
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<td>30</td>
<td>58</td>
</tr>
<tr>
<td>White</td>
<td>1352</td>
<td>57</td>
<td>10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school education</td>
<td>210</td>
<td>9</td>
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<td>College</td>
<td>997</td>
<td>42</td>
<td>11</td>
<td>36</td>
</tr>
<tr>
<td>Married</td>
<td>854</td>
<td>36</td>
<td>11</td>
<td>30</td>
</tr>
</tbody>
</table>

*Data are given as percentage of women unless otherwise specified
†Calculated from the imputed data set.
‡South Asian and Native American.
the anticipated overlap between smoking and drinking behaviors, we ran a collinearity analysis using STATA version 8 (Stata Corp, College Station, Tex). Collinearity was not significant and did not preclude entering the conditions into the regression model together.

### Predicted Probabilities

To model the likelihood that a patient presenting to a clinical setting would have experienced recent or lifetime IPV, we constructed predicted probabilities for smoking and problem drinking based on the full logistic regression models. Predicted probabilities were evaluated at different configurations of smoking and drinking for the entire sample, conditional on the observed data for the other covariates. Therefore, taking into account each individual woman's unique characteristics, we computed the probability that she had experienced IPV based on an assigned smoking and drinking status. The individual probabilities were then combined into a mean predicted probability reflective of the entire sample. These analyses were conducted using SAS version 9.1 (SAS Institute Inc, Cary, NC).

### Missing Data

To avoid bias caused by deleting cases with missing data, we imputed multiple values for all missing data using the sequential regression approach developed by Raghunathan et al. as implemented by the IVEware macro for SAS statistical software version 9.1. Because most variables in our study were categorical, the sequential regression approach was more appropriate than the more common multivariate normal approach. Results from conventional analyses were pooled using standard procedures to obtain valid inferences using the multiply imputed data.

### RESULTS

#### SOCIODEMOGRAPHIC STATISTICS

The mean age of the women surveyed was 35 years, and 57% were white, 22% were black, and 11% were Hispanic (Table 1). Almost half (49%) had at least a high school education, and 36% were married.

#### PREVALENCE OF IPV EXPOSURE AND HEALTH BEHAVIORS

The 12-month rate of IPV was 15% (Table 1), with a lifetime exposure rate of 41%. More than 1 in 4 women smoked (28%), 35% were classified as problem drinkers, and the mean (SD) depressive symptoms score from the SF-12 was 1.75 (0.87). The co-occurrence between IPV (both 12-month and lifetime) and smoking and drinking is displayed in Table 1. One fifth of smokers and drinkers experienced 12-month IPV. This proportion rises to half for lifetime IPV.

There was expected overlap in behavioral health conditions. Among women who smoke, 52% drank; among drinkers, 42% smoked.

#### THE STRENGTH OF THE ASSOCIATION BETWEEN BEHAVIORAL HEALTH AND IPV

Positive screens for alcohol and tobacco use were associated with IPV within the past 12 months in logistic regression analyses (Table 2). These relationships remained statistically significant when adjusted for age, race, education, marital status, health care site, and depressive symptoms. Women who smoke were 1.5 times more likely to report recent violence; problem drinkers were 2.4 times more likely than nondrinkers to have experienced recent IPV. Smokers were 80% more likely to have experienced lifetime IPV, and drinkers were more than 40% more likely (Table 2).

### Predicted Probabilities of IPV

After estimating the predicted probability of experiencing IPV given different configurations of smoking and drinking behaviors, we found that the probability that a woman experienced IPV within the past 12 months was 10% for a nondrinker and nonsmoker. This rose to 14% for a smoker and doubled to 21% for a problem drinker. A woman who reported both smoking and drinking behaviors had a 27% predicted probability of experiencing IPV in the preceding year (Figure). The same analysis was run for lifetime abuse, and the predicted probabilities were even higher (Figure): a woman who smoked and exhibited signs of problem drinking had a 54% probability of having experienced IPV in her lifetime.
Our findings demonstrate that adverse health behaviors can be markers for IPV among women medical patients. Because clinicians routinely inquire about smoking and drinking behaviors, this knowledge about a patient may increase clinical suspicion for either recent or more distant IPV. Detection of recent IPV allows the clinician to identify patients who may be at more immediate risk and allows immediate intervention through safety planning and referral to appropriate resources. Our data suggest that women who smoke or engage in problem drinking have a higher probability of recent IPV. Clinicians who routinely inquire about smoking and alcohol use may not realize that these behaviors may be markers for increased probability of recent IPV for a given patient.

The prevalence of both recent and lifetime IPV reported in this study was higher than the estimates in population-based studies and in some patient populations. Our study is unique in that women patients are surveyed in different medical specialties using the same instrument; for this reason, the rates presented here may appear different than those in studies that report rates by individual specialty. We also used 10 items to assess IPV, which is more than what most studies in clinical settings use.

An important limitation of the study is that the cross-sectional design does not allow us to establish causality in this observed association between IPV and behavioral health consequences. The use of IPV as the dependent variable is not intended to infer that smoking and problem drinking cause IPV. The abundant literature in this area suggests otherwise. Another limitation of the study is the overall response rate of 57%. This rate likely reflects the difficulty of recruiting women who are patients and actively seeking medical care. Had the study been restricted to subspecialties in which a higher proportion of women are seeking routine or preventive care, the response rate would be expected to be higher, as it was in the obstetrics and gynecology clinics in our study.

Another concern is the potential for misclassification on the behavioral health variables because single items were used to assess tobacco and alcohol use. These brief queries may be consistent, however, with questioning conducted in many clinical practices where time is limited.

The ethnic category of “other” aggregates several groups who are known to have higher rates of IPV such as Native Americans and South Asians but who might not otherwise be culturally comparable; the small sizes of these populations in our study necessitated this grouping. Finally, our study was conducted at health care sites in a large Eastern urban and suburban area; it is unclear how these results would generalize to a rural area or another region of the country.

Based on the evidence provided by this study, clinicians should be alert to the potential for increased risk of IPV in their medical patients who use tobacco and engage in problem drinking. This model using adverse health behaviors to predict probabilities of IPV should not supplant direct inquiry; rather, it is intended to raise the awareness of busy clinicians by reframing the association between smoking, problem drinking, and IPV.

Women who have experienced abuse support direct inquiry by clinicians about IPV. In the future, longitudinal studies of behavioral health in women who have experienced IPV will allow elucidation of causal mechanisms and evaluation of health outcomes from interventions addressing IPV in medical settings. Over time, as clinicians become increasingly aware of the considerable prevalence of IPV in medical practices and of its health impact, we anticipate that their comfort level with direct inquiry will increase as it has for smoking and drinking. In the meantime, clinicians should be alert to the probability that patients they are currently screening and evaluating for tobacco and alcohol use have a heightened likelihood of experiencing recent or past IPV, an all too common finding among medical patients.

Accepted for Publication: January 18, 2005.
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Funding/Support: This study was funded by the Agency for Healthcare Research and Quality, Rockville, Md.

Acknowledgment: We thank Brooke Williams and Anna Barahona for providing invaluable assistance with data collection and Glendene Lemard, PhD, for reviewing the manuscript.

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