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Between Me and The Computer: Increased Detection of Intimate Partner Violence Using a Computer Questionnaire

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NOTE: At the time of publication the author, Karin V. Rhodes, was affiliated with the University of Chicago. Currently, she is a faculty member with the School of Social Policy and Practice at the University of Pennsylvania.

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Abstract

Study objective: The emergency department is a problem-focused environment in which routine screening for intimate partner violence (IPV) is difficult. We hypothesized that screening for IPV during computer-based health-risk assessment would be acceptable to patients and improve detection.

Methods: We performed a descriptive study of IPV data collected during a controlled trial of computer-based health promotion in an urban hospital ED. Patients received computer-generated health advice, and physicians received patient risk summaries. Outcomes were patient disclosure and physician documentation of IPV and associated risks.

Results: Two hundred forty-eight patients (69% female, 90% black, mean age 39 years) participated in a clinical trial of computer-based health promotion in the ED. Of 170 women, 53 (33%) disclosed emotional abuse, and 25 (15%) disclosed physical abuse. Of 78 men, 22 (29%) disclosed emotional abuse, and 5 (6%) disclosed physical abuse. Patients were also willing to self-report a history or concern of hurting someone close to them. This was true for 21 (14%) women and 15 (22%) men. Controlling for demographic factors, disclosures of victimization and perpetration were associated with multiple psychosocial risks. Computer screening resulted in chart documentation in 19 of 83 potential cases of IPV compared with 1 case documented in the group that received usual care.

Conclusion: Providing an opportunity for patients to confidentially self-disclose IPV has the potential to supplement current screening efforts and to allow providers to focus on assessment, counseling, and referral for those at risk. However, further measures will be needed to ensure that information gathered through computer screening is adequately addressed during the acute care or follow-up visit.

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"Between Me and the Computer": Increased Detection of Intimate Partner Violence Using a Computer Questionnaire

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INTRODUCTION

Intimate partner violence (IPV), defined as a pattern of coercion, physical abuse, or threat of violence in an intimate relationship, remains a major source of morbidity and mortality worldwide.[1] In the United States, the prevalence of physical abuse in a current relationship is approximately 8.4% for cohabiting women aged 18 to 65 years, 92% of whom have never told a health care provider.[2] For this reason, there are multiple recommendations that all health care providers routinely screen for abuse.[3-5] These recommendations are based on the burden of suffering and evidence that victims of abuse are overrepresented in health care settings.[6] Although ED studies with dedicated screeners report prevalence rates in the 25% to 35% range,[7,8] detection rates rapidly decrease when screening is left to busy physicians and nurses.[9,10] Most emergency departments have protocols for routine IPV screening, but the current system often fails to identify battered women. This is due, in large part, to provider time constraints and reluctance to initiate discussions about partner violence.[11] Primary care settings, with increasingly abbreviated scheduled appointments, face similar obstacles.[12,13] Nonetheless, patients expect physicians to inquire and will usually disclose abuse if directly questioned.[14]

Qualitative reports from women who have escaped abuse indicate that even brief discussions with physicians are therapeutic when conversations are conducted in a concerned, nonjudgmental way.[15] Effective communication with a health care provider has been linked to improved health outcomes in a number of areas.[16,17] For domestic violence, physician-nurse communication skills might also be a key predictor of patient outcome. Rodriguez et al[18] found that women who had experienced abuse favored direct inquiry and identified provider reluctance to inquire about abuse as a significant barrier to disclosure. They reported that when a provider both acknowledged the abuse and validated the patient's self-worth, it had a powerful effect on her perception of the situation and, in some cases, was a turning point in the process of extrication from the abusive relationship. However, the provider has to be able to recognize cues to abuse before this communication can take place.

The vast majority of patients experiencing IPV in their lives will present for non–injury-related complaints and will only be identified as victims of abuse through routine screening.[19,20] Although the ED patient population is associated with high prevalence rates of IPV,[21] the ED setting presents formidable barriers to routine screening.[22,23] Recently, there has been increasing recognition of the value of EDs as potential sites for injury surveillance and violence prevention.[24-26] Practical methods for conducting IPV screening are needed to realize this potential.

Survey research data suggest that interactive computer-based screening can achieve higher rates of disclosure of sensitive issues than personal interviews.[27] In the health care setting, self-administered computer surveys have the potential to provide a relatively low-cost and staff-free method to identify serious health risks. Patients find computer-based health-risk appraisal methods acceptable. They might even be more likely to answer sensitive questions truthfully.[28] A systematic review of the literature found that computer-based, clinical decision support systems enhance preventive care.[29] However, experience is limited regarding integration of computer-based screening technology into clinical practice. The current study is drawn from a larger clinical trial of computer-based screening published in *Annals of Emergency Medicine*.[30] The purpose of this analysis was to evaluate the feasibility and utility of using computers to screen for IPV. We hypothesized that screening for risk of partner abuse during computer-based health-risk assessment would be acceptable to patients and improve detection of IPV.

MATERIALS AND METHODS

We have previously reported a retrospective review of all IPV data collected during a controlled clinical trial of computer screening to assess health risks.[30] In that study, patients were alternately assigned to a computer-

based intervention or usual care. The overall trial focused on opportunities for health promotion in the ED and found nonurgent patients presenting to an urban ED were willing and able to use a computer-based health-risk assessment. A majority of participating patients disclosed important health risks and requested health information.

The current study assesses the computer screening process for identifying and addressing IPV. To accomplish this goal, we reviewed specific computer responses regarding IPV and associated risks collected from the intervention arm of the previously reported trial.[30] A chart review of all patients enrolled in the trial was conducted to assess physician documentation of IPV and other psychosocial risks.

The study was conducted in an urban university ED that handles approximately 75,000 visits each year. The patient population is 85% black, 12% white, and 2% Asian. Fifty-two percent are women. Our study was limited to adult patients aged 18 to 65 years who presented for emergency care with a nonurgent complaint and were triaged into the lowest 2 categories of our 5-level triage system; approximately 50% of adult visits to our ED are assigned to these 2 triage categories. The adult ED has a staff of 36 emergency medicine residents supervised by 9 full-time and 3 part-time emergency medicine faculty physicians.

The IPV screening was done as part of a computer-based assessment of health risks. The development, validation, and piloting of the questionnaire are described elsewhere.[30-32] The questionnaire has a fifth-grade reading level and is taken on a touch-screen computer in a private setting. Completion time in this study averaged 17 minutes. As part of the informed consent process, patients were told that the questionnaire asks about lifestyle and behavioral health risks, that the results would be shared with the treating physician, and that they were free to withdraw from the study at any point. The institutional review board approved the study.

The IPV screening questions are sex neutral and occur midquestionnaire under the category "Conflict and Stress." They were framed by the statement, "Now for some questions about conflict in your life. We all fight or disagree sometimes with other people." The 5 IPV screening questions were developed from those previously validated in the Abuse Assessment Screen[33] and the Partner Violence Screen[34] and from those suggested in the Family Violence Prevention Fund's *Resource Manual for Health Care Providers*.[35] Questions were subsequently modified after cognitive interviews[36] with 141 nonurgent patients and patient relatives in our ED. IPV questions refer to abuse in a current relationship and cover 3 domains: emotional abuse (partner jealousy and control, isolation from friends and family, insults and threats), perception of safety, and physical abuse. In addition to our 5-question IPV screen, patients were asked one question about lifetime history of sexual abuse or assault and 2 questions on IPV perpetration.

After completing the questionnaire, the patients were offered a printout to take with them. Several pages of individualized health recommendations are generated by the computer program on the basis of patient disclosure of risks under the various health categories. For example, patients disclosing emotional abuse would receive the following: "Your answers indicate that you may be in a relationship where there is a lot of conflict and stress. In healthy relationships, people do not put each other down, act jealously, or try to control their loved one. No one deserves to be dominated, insulted, hurt or threatened. If this is happening in your relationship, you may need some support or help to solve the problem. The (local IPV resource name and number) has many resources that can help you." The community services and hotline numbers generated are based on patient age and sex.

The results of the patient survey were shared with the treating physician in the form of a computer-generated 1-page summary of the patient's health risks, which was placed on the patient's ED chart. The summary included a physician prompt to assess for domestic violence if the patient had answered one or more of the IPV questions affirmatively. Hospital-based social service resources and numbers were listed on the physician prompt, along with referrals to a 24-hour, community-based IPV service organization. Physicians were given approximately 5 minutes of orientation to the risk summaries before

the start of data collection. These summaries were removed after the ED visit and did not become part of the permanent medical record.

Screening data were analyzed on the basis of IPV and perpetration-risk screening status. A positive screening result for IPV was any positive response to 1 of the 5 victimization questions. A positive screening result for perpetration was a positive response to having hurt someone close to the respondent or patient concern that he or she might do so.

The chart review compared charts of patients who had received the computer screening with charts of control patients for physician documentation of IPV. Our ED charts include check boxes for 6 psychosocial risk factors: tobacco use, alcohol abuse, drug use, sexually transmitted infection risk factors, psychiatric symptoms, and domestic violence. Charts are kept in the department for 1 month after the ED visit. Two university student reviewers were trained by the primary author and conducted independent reviews by examining study charts for physician use of the check boxes. When residents drew a line down a column of negative boxes to indicate a negative review of systems, we considered this an inaccurate reflection of systematic IPV screening. Therefore, we judged that IPV had been detected or assessed only if the check box for IPV was checked as positive. If checked as negative, there had to be a specific note in the chart before we regarded that there had been an assessment for abuse. This approach might underestimate the actual screening rate because some boxes that are checked as negative reflect true screening. However, any such effect should apply similarly across comparison groups. Chart reviewers were blinded to whether a patient had participated in the computer screening and whether these results were shared with the treating physician and were blinded to the assessment of the other chart reviewer. There was substantial agreement between reviewers' ratings for physician detection, documentation, or both of domestic violence (κ=0.86). The first author resolved any discrepancies between the reviewers.

We first examined whether IPV disclosure or perpetration-risk disclosure was associated with other psychosocial factors. To do this, we examined rates of mental health, substance abuse, and violence-related risks for those computer-screened patients who disclosed either IPV or perpetration. Logistic regression was used to assess whether these associations remained significant after controlling for demographic characteristics of age, sex, marital status, race, education, and insurance status.

RESULTS

The Figure is a flow chart of the original controlled trial; 248 patients used the computer screen, and 222 patients served as the control group. The demographic factors for all study patients are presented in Table 1. With the exception of the chart review, the current analysis is restricted to the 248 patients enrolled in the computer-screened group. Therefore, Table 1 also presents data on computer-generated disclosure of several sensitive behavioral risks. Several of these risk factors were more commonly identified among persons with positive screening results for IVP victimization and perpetration risk relative to those with negative screening results.

Table 2 lists the frequency of IPV victimization and other violence-related questions with percentages of positive responses by sex. Overall, 58 (34%) of 170 women answered yes to at least 1 of the 5 questions about current abuse. Of these, 53 (91%) of 58 disclosed emotional abuse and 25 (43%) of 58 disclosed physical abuse from a current partner. Men also disclosed experiences with abuse in a current relationship. By using the same criteria, 25 (32%) of 78 men also had positive screening results for IPV victimization experiences. The vast majority of this was emotional abuse. However, 5 of 78 men (6% of all male respondents) disclosed physical abuse from a current partner.

Overall, 83 (33%) of the 248 computer-screened patients reported either emotional or physical abuse by a current partner (positive IPV screening result). Forty (16%) disclosed either a history or a concern that they might hurt someone close to them. Disclosures of victimization and perpetration risk were associated with multiple other psychosocial risks. Table 3 presents the association of IPV and perpetration disclosures with

other violence-related psychosocial risk factors, placing each risk factor in a logistic regression model controlled for age, sex, race, marital status, education, and insurance status but not for other psychosocial risks. The association between IPV and perpetration risk disclosure with other risk factors was most notable for substance abuse, depression, other experiences with violence, partner depression, and problem drinking by the partner. Notably, 70% of patients with positive IPV results and 80% of patients with perpetration risk factors elected, on the computer questionnaire, to receive information (for themselves or someone else) on "… how to get help for depression."

Table 4 compares documentation of IPV risks on the charts of computer-screened patients versus that on the charts of control patients. Findings are based on a review of 80% of charts. The percentage of missing charts did not vary by whether the patient had received computer screening. Among patients participating in computer screening, potential IPV was noted on the ED charts of 19 (9.5%) of 201 patients (17 women and 2 men), all of whom had positive screening results on the computer questionnaire. There were no cases of IPV documentation that were not identified by computer screening. By contrast, only 1 (0.6%) of the 178 control group charts showed a positive screening result for IPV.

DISCUSSION

Nonurgent ED patients in our study were quite willing to disclose sensitive experiences with IPV on a computer-based health-risk assessment. Among women who completed the computer health-risk assessment study, 33% disclosed emotional abuse and 15% reported physical abuse in their current relationship. Both rates are comparable with American Medical Association

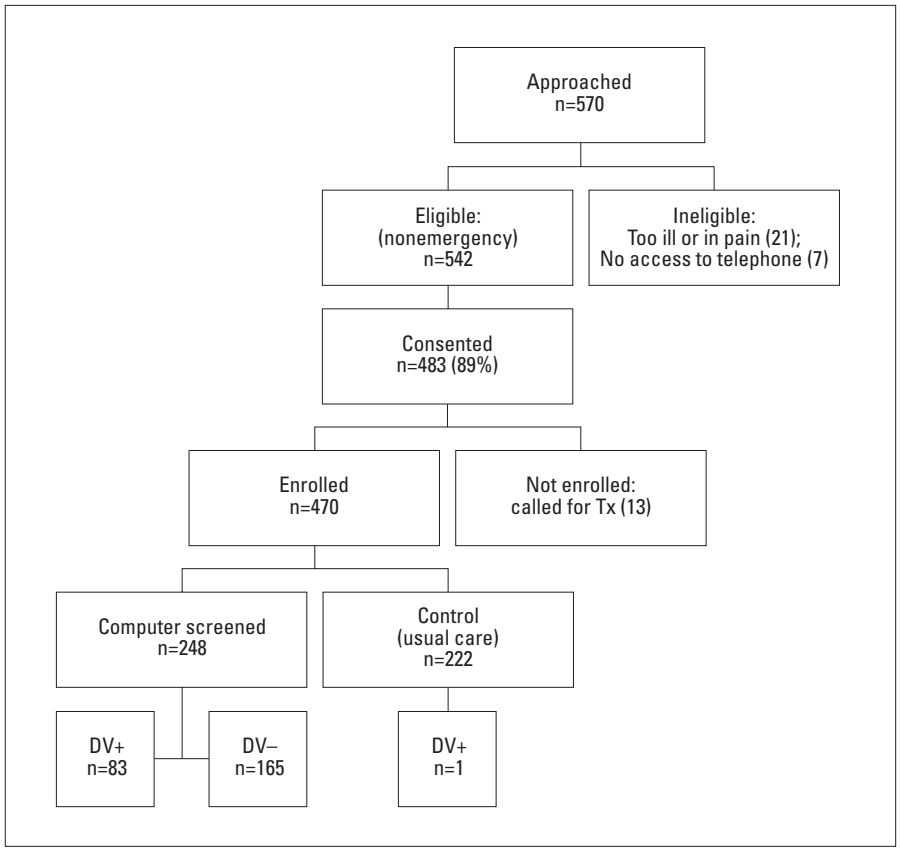

Figure.
Flow chart of original controlled trial. ***Tx,*** *Treatment;* ***DV,*** *domestic violence.*

estimates,[37] as well with previous studies of IPV screening.[7,8,38] ED screening programs that educate staff about the importance of IPV achieve a similarly high initial rate of detection, but detection decreases dramatically over time. Several researchers have explored staff barriers to screening for IPV and used a variety of staff-centered educational modalities and system modifications to support the process. These include triage-based screening, chart stickers, quality assurance reviews, staff feedback, and even recorded questions. None have had a positive long-term effect on rates of IPV screening by staff.[10,38-40]

We found that allowing patients to self-disclose risks on a computer resulted in a substantially higher rate of IPV detection compared with the rate in a group that received usual care, but it did not guarantee charting and follow-up by the treating physician. Computer-assisted disclosure of IPV risk resulted in physician

Table 1.
Demographic variables for control and computer-screened patients, with frequencies of associated risks for computer-screened patients only.

Variables	Control (n=222)	Computer-Screened (n=248)
Age, y, mean (SD)	42 (21)	35 (15)
Men (n=78)	45 (18)	37 (16)
Women (n=170)	41 (21)	33 (14)
Race, No. (%)		
Black	199 (90)	226 (91)
White/other	23 (10)	22 (9)
Marital status, No. (%)		
Married	60 (27)	48 (19)
Single	129 (58)	148 (60)
Divorced or separated	27 (12)	42 (17)
Widowed	6 (3)	10 (4)
Insurance status, No. (%)		
Medicaid	89 (40)	92 (37)
Medicare	43 (19)	41 (17)
Private	59 (27)	85 (34)
None	31 (14)	30 (12)
Reason for visit, No. (%)		
Medical	128 (58)	124 (50)
Injury	52 (23)	68 (27)
Gynecologic or urinary	39 (18)	49 (20)
Other	3 (1)	7 (3)
Selected risk factors,* No. (%)		
Use of drugs[1]		33 (13)
At-risk drinking[2]		46 (19)
Partner with drinking problem[3]		22 (9)
Symptoms of depression[4]		87 (35)
Thoughts of suicide[5]		33 (13)
Partner with depression[6]		18 (7)
High-risk sexual behavior[7]		60 (24)
History of sexual abuse or assault[8]		39 (16)
Exposure to knife or gun violence[9]		54 (22)
Has access to handgun[10]		63 (25)

*These risks were assessed for computer-screened patients only: (1) use of street drugs in past 4 weeks or history of intravenous drug use; (2) at least one positive response to CAGE questions or drinking at least 3 times per week and ≥4 drinks per day on occasion; (3) "Does your partner have a drinking problem?"; (4) "Depressed greater than 2 weeks in a row in the past 12 months?"; (5) thoughts of hurting self or committing suicide in the past 12 months; (6) "Does your partner have a problem with depression?"; (7) nonuse of condoms and one of (a) history of sexually transmitted disease in past 5 years, (b) partner with a sexually transmitted disease in past year, (c) >1 sexual partner in past year, or (d) sexual exposure to prostitution; (8) lifetime history of being made to have sex when patient did not want to; (9) history of witnessing or participating in knife or gun violence; (10) has handgun in home or car or someone close has a gun.

Table 2.
Distribution of "yes" answers to violence-related questions by sex.

Questions	Yes, No. (%) (Total n=248) Men (n=78)	Women (n=170)
IPV questions		
Possible emotional abuse		
Do you have a partner or spouse who gets very jealous or tries to control your life?	13 (17)	42 (25)
Does your partner or spouse try to keep you away from your family or friends?	8 (10)	17 (10)
Does someone close to you sometimes say insulting things or threaten you?	15 (20)	33 (20)
Yes to at least one of the above emotional abuse questions	23 (29)	53 (31)
Perception of safety		
Is there someone you are afraid to disagree with because they might hurt you or other family members?	5 (6)	15 (9)
Physical abuse in a current relationship		
Are you in a relationship with someone who has pushed, hit, kicked, or otherwise physically hurt you?	5 (6)	25 (15)
Possible current intimate partner abuse (Yes to any of the above domestic violence questions)	25 (32)	58 (34)
Other violence-related questions		
Have you every physically hurt someone close to you?	11 (14)	15 (9)
Are you worried that you might physically hurt someone close to you?	7 (9)	9 (5)
In the past 12 months, have you ever felt so low that you thought about harming yourself or committing suicide?	9 (11)	17 (10)
Have you ever been made to have sex when you didn't want to?	10 (13)	27 (16)
Is there a handgun in your home or car?	16 (21)	12 (7)
Have you ever witnessed or taken part in any argument or fight where someone had a gun or knife?	24 (31)	30 (18)

documentation of IPV on the charts of only 19 of 83 patients who disclosed at least one risk factor for IPV (32% of women and 8% of men with positive IPV screening results). This might have been due, in part, to inadequate physician orientation to the computer-generated risk summary forms or failure of support staff to address these issues in a busy, urban ED with a large number of urgent presentations. Alternatively, although the study did not specifically address this issue, some emergency physicians might be reluctant to document IPV risk if they believe it is unrelated to the reason for the visit. Even more speculatively, it is possible that urban emergency physicians regard violence-related experiences disclosed by their patients as so commonplace that they are ignored.

We found that men, as well as women, were willing to disclose experience with emotional and physical abuse in a current relationship. Of men with positive IPV screening results, 44% also disclosed a history or concern regarding perpetration, which was defined as "hurting someone close to you." The literature on screening men for domestic violence is meager.[41,42] Several studies have reported that men screened in the ED for IPV had similar rates of victimization by an intimate partner as women.[43,44] These studies and our own screening results might be documenting a high rate of low-level, bidirectional emotional or physical violence[45] and do not make a clear distinction between a victim or a perpetrator. One trauma unit study linked the names of men presenting to an ED with injuries inflicted by their female partner to police department records and found that half of these men had prior arrests for domestic violence perpetration.[46] Similarly, a study of heterosexual women arrested for perpetrating domestic violence found that the vast majority were victims of long-term battering.[47]

We know from population-based surveys that approximately 12% of both men and women engage in physically violent behavior toward their partners; however, women experience the bulk of the negative medical and psychologic consequences.[48,49] Experts in the domestic violence field have concluded that many men who disclose abuse in the ED are primary abusers.[50] If true, screening men for victimization experiences might be useful for detecting potential IPV perpetrators. Studies have shown that any violence in an intimate relationship has long-term negative repercussions for those involved.[51] Computer screening could provide an opportunity to intervene on behalf of men, as well as women.

Table 3.
Associations between a positive screening result for risk of IPV victimization or perpetration and odds ratios for patient and partner psychosocial risk factors by using logistic regression and controlling for demographic variables of sex, age, race, marital status, education, and insurance status.[*]

Computer-Screened Patients Only (n=248)	Risk of IPV Victimization		Possible Risk of Perpetration	
	OR	95% CI	OR	95% CI
Use of street drugs	4.76	2.03–11.18	7.63	3.08–18.87
At-risk drinking	2.22	1.07–4.59	2.93	1.31–6.54
Partner with drinking problem	4.11	1.53–11.00	2.93	1.03–8.35
Symptoms of depression	2.52	1.36–4.65	3.69	1.70–8.00
Thoughts of suicide	5.74	2.47–13.30	5.41	2.33–12.52
Partner with depression	14.35	3.80–54.17	6.41	2.28–18.02
High-risk sexual behavior	0.91	0.48–1.76	1.55	0.70–3.40
History of sexual abuse or assault	5.44	2.55–11.63	1.75	0.74–4.16
Exposure to knife or gun violence	2.86	1.83–5.51	4.76	2.25–10.09
Has access to handgun	2.29	1.19–4.40	2.80	1.28–6.14

OR, Odds ratio; **CI,** confidence interval.
[*]Individual risk factors (defined in footnote to Table 1) were examined one at a time in a logistic regression model that controlled for demographic variables of sex, age, race, marital status, education, and insurance status. Because of low numbers in each group (IPV n=83; perpetration n=40), the individual risk factors are not adjusted for each other.

Table 4.
Numbers of charts with physician documentation of psychosocial risks on control and computer-screened charts.

Psychosocial Risks	Control (n=178)	Computer-Screened (n=201)
IPV	1	19
STD risk	8	24
Depression	1	13
Alcohol	29	33
Tobacco	46	40
Street drugs	13	12

STD, Sexually transmitted disease.

A recent study of staff training as a tactic to improve ED detection and response to battered women found that it improved provider knowledge, attitudes, and screening. However, there was no increase in the overall rate of identification of battered women.[52] This could be because the main barrier to identification is not staff knowledge or attitudes but a system that overburdens providers and does not provide an environment conducive to sensitive discussions. Controlling for demographic factors, disclosure of victimization and perpetration in our study was associated with several psychosocial risk factors. On the basis of patient report, this was also true of the patient's partner. Whether risk factors such as depression and substance abuse predated abuse or occurred as a consequence is unknown. A longitudinal study design is needed to clarify this matter. The strong associations we noted between emotional and physical abuse and comorbid mental health conditions demonstrate the importance of assessing the full range of psychosocial risks.

Our study has several limitations. Generalizability is limited by the fact that it took place in a single, urban, university hospital ED. Given the small number of patients, we had inadequate power to assess associations between multiple risk factors, including such common risk factors as alcohol and tobacco use. Our process for chart review probably underestimated whether the treating physician addressed IPV during the visit. We have no information about the true rate of IPV among the control patients because they were not screened. However, it is unlikely that baseline differences between the computer-screened and control groups were large enough to explain the marked differences we observed in IPV detection and documentation. Finally, observed rates of IPV disclosure for the intervention group are similar to those seen in published prevalence studies in other urban EDs, but there is an important difference between asking patients whether certain experiences have happened to them and documenting a systematic, coercive pattern of intimate partner abuse. A computer screening tool might enhance detection of IPV, but the talents of a skilled clinician or domestic violence advocate are needed to assess safety issues and evaluate the nature and extent of the disclosed abuse.

In summary, health care providers have been strongly encouraged to conduct universal screening and referral for IPV. By providing patients with an opportunity to confidentially disclose sensitive information affecting their health, computer screening might facilitate this goal.

Author contributions: KVR, DSL, and WL conceived the study and designed the trial. KVR and DSH obtained funding and supervised data collection. KVR and TH performed data collection and database management. KVR and DSL performed data analysis. KVR and WL drafted the manuscript, and all authors substantially contributed to its revision. KVR takes responsibility for the paper as a whole.

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Note: The quotation in the title is from a patient who commented, "I liked that it was between me and the computer."

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