A Clinical Decision Support Tool for Intimate Partner Violence Screening Among Women Veterans: Development and Formative Evaluation of Provider Perspectives

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Abstract

Background: Women veterans, compared to civilian women, are especially at risk of experiencing intimate partner violence (IPV), pointing to the critical need for IPV screening and intervention in the Veterans Health Administration.

Objective: To address IPV screening implementation barriers (e.g., providers' discomfort addressing IPV and making decisions about the appropriate type or level of intervention), this study developed and tested a novel IPV clinical decision support (CDS) tool for providers in the Women's Health Clinic (WHC), a primary care clinic within the Veterans Affairs Palo Alto Heath Care System. This tool provides intelligent, evidence-based, step-by-step guidance on how to conduct IPV screening and intervention according to patient factors.

Methods: Informed by existing CDS development frameworks, developing the IPV CDS tool prototype involved six steps. We then obtained preliminary provider feedback on user experience and clinical utility of the CDS tool by administering the System Usability Scale (SUS) and conducting semi-structured interviews with six WHC providers. SUS results were examined using descriptive statistics. SUS scores above 68 demonstrate above average tool usability. Interviews were analyzed using rapid qualitative analysis to extract actionable feedback to inform design updates and improvements.

Results: This study includes a detailed description of the IPV CDS tool. Providers indicated good tool usability (SUS score: M = 77.5, SD = 12.75). They found the tool helpful and needed in their practice, and emphasized that it increased their confidence in managing patients reporting IPV. However, providers expressed concerns regarding the tool's length/workflow integration, flexibility, and specificity of information.

Conclusions: Provider feedback on the IPV CDS tool is encouraging and will be used to improve the tool. This study offers an example of an IPV CDS tool that clinics can adapt to enhance the quality and efficiency of their IPV screening and intervention process.

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Abstract

Background: Women veterans, compared to civilian women, are especially at risk of experiencing intimate partner violence (IPV), pointing to the critical need for IPV screening and intervention in the Veterans Health Administration (VHA). However, implementation of paper-based IPV screening and intervention in VHA has revealed significant barriers. Barriers include providers' inadequate IPV training, competing demands, time constraints, discomfort addressing IPV and making decisions about the appropriate type or level of intervention.

Objective: To address IPV screening implementation barriers, this study developed and tested a novel IPV clinical decision support (CDS) tool for providers in the Women's Health Clinic (WHC), a primary care clinic within the Veterans Affairs Palo Alto Health Care System. This tool provides intelligent, evidence-based, step-by-step guidance on how to conduct IPV screening and intervention according to patient factors.

Methods: Informed by existing CDS development frameworks, developing the IPV CDS tool prototype involved six steps: 1) identifying the scope of the tool, 2) identifying IPV screening and intervention content, 3) incorporating IPV-related VHA and clinic resources, 4) identifying the tool's components, 5) designing the tool, and 6) conducting initial tool revisions. We then obtained preliminary provider feedback on user experience and clinical utility of the CDS tool by administering the System Usability Scale (SUS) and conducting semi-structured interviews with six WHC physicians. Providers' SUS scores were examined using descriptive statistics, with scores above 68 demonstrating above average tool usability. Interviews were analyzed using rapid qualitative analysis to extract actionable feedback to inform design updates and improvements.

Results: This study includes a detailed description of the IPV CDS tool. Findings indicated that

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the tool was generally well-received by providers. Providers indicated good tool usability (SUS score: $M = 77.5$, SD = 12.75). They found the tool clinically useful, needed in their practice, and feasible to implement in primary care; they emphasized that it increased their confidence in managing patients reporting IPV. However, providers expressed concerns regarding the tool's length/workflow integration, flexibility, and specificity of information. Several providers, for example, found the tool too time-consuming when encountering high risk patients; they suggested multiple uses of the tool (e.g., educational tool for less experienced providers and a check list for more experienced providers), as well as, including more detailed information (e.g., list of local shelters).

Conclusions: Provider feedback on the IPV CDS tool is encouraging and will be used to improve the tool. This study offers an example of an IPV CDS tool that clinics can adapt to potentially enhance the quality and efficiency of their IPV screening and intervention process. Additional research is needed to determine the tool's clinical utility in improving IPV screening and intervention rates, and patient outcomes (e.g., increased patient safety, reduced IPV risk, increased referrals to mental health treatment).

Keywords: intimate partner violence, clinical decision support, intimate partner violence screening, women veterans

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Introduction

Background

Intimate partner violence (IPV), defined as physical or sexual violence, stalking, psychological, emotional, or verbal aggression, coercion, or economic abuse, by an intimate partner [1], is a serious public health issue that disproportionately affects women. In the United States, more than one in three women have experienced IPV in their lifetime [2]. Compared to men, women are more likely to suffer from negative IPV-related outcomes, such as physical injury, fear, and posttraumatic stress disorder [1,3]. Women veterans, compared to civilian women, are especially at risk of experiencing IPV, with up to 60% of women veterans in relationships reporting IPV victimization [4,5].

To address the increased IPV risk for women veterans and in line with current recommendations by the United States Preventative Services Task Force [6], in 2014 and updated in 2024, the Veterans Health Administration (VHA) issued a national directive recommending IPV screening and intervention across primary care and other VHA facilities nationwide [7]. As part of this rollout, the Women's Health Clinic (WHC), a primary care clinic at the Veterans Affairs Palo Alto Health Care System (VAPAHCS), began piloting a paper-based IPV screening and intervention protocol, but preliminary evaluations revealed significant implementation barriers. Barriers included providers' inadequate IPV training, competing demands, time constraints, discomfort addressing IPV and making decisions about the appropriate type or level of intervention. These findings align with those of a larger qualitative study examining the implementation of IPV screening and intervention in women's health primary care clinics across 11 VHA Medical Centers nationwide [8]. Such barriers are understandable given that providers screening for IPV are taxed with making complex decisions

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that require navigating varying risk levels associated with differing IPV interventions depending on the patient's circumstances. Providers must weigh a number of factors including patients' mental and physical health, characteristics of the abuse and of the perpetrator, lethality risk due to IPV, and family and economic circumstances, to deliver care that minimizes risk of danger for the patient.

Provider-related barriers regarding IPV screening and intervention may be addressed through the use of clinical decision support (CDS). Clinical decision support tools are computer-based systems that guide individuals through a decision-making process by providing intelligently filtered information at appropriate times in the clinical workflow for the purpose of increasing healthcare quality and efficiency [9]. They can incorporate computerized alerts, clinical guidelines, patient-specific information and other contextual factors, documentation templates, and summary reports, among others [9]. CDS has been highly effective in the treatment of medical conditions, such as reducing cardiovascular risk in patients with Type 2 diabetes [9], but the application of CDS to IPV screening and intervention is novel.

CDS, in the IPV context, can optimize the clinical decision-making process by efficiently guiding providers through IPV assessment, documentation, and intervention. Results from Kaiser Permanente, one of the first integrated health care systems to adopt a CDS approach to IPV screening and assess its impact on clinical care, have been promising [10]. They show that integration of a clinical reminder in the electronic health record to screen for IPV coupled with prompts on questions to ask as well as "smart links" to IPV materials (e.g., safety planning tips, IPV community resources) was associated with a significant increase in mental health referrals [10]. However, more sophisticated and interactive IPV CDS tools that can offer providers intelligent step-by-step guidance on how to conduct IPV screening and intervention

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according to patient factors have yet to be developed. For example, existing tools fail to differentiate between women reporting higher levels of IPV (e.g., severe physical violence) who may need extensive resources and a safety plan, or lower levels of IPV (e.g., only yelling and calling names) who may need different and less intensive resources. A more advanced step-by-step IPV CDS tool can enhance the quality of IPV screening and intervention by being sensitive to patient factors and facilitate the decision-making process for providers.

Objectives

This study sought to describe 1) the development of a novel, interactive step-by-step IPV CDS tool prototype for providers in the VAPAHCS WHC and 2) preliminary provider feedback on user experience and clinical utility of the CDS tool. This study provides an example of the process used to develop an interactive step-by-step IPV CDS tool and how such a tool may be used to address IPV screening and intervention implementation barriers in a primary care clinic. Interactive, step-by-step IPV CDS has yet to be applied in the VHA and other health care systems more broadly, and holds considerable promise for ensuring efficient implementation of best IPV care practices and, consequently, improving the value, accessibility, and quality of healthcare delivered to women veterans and civilians. In turn, this can lead to improved IPV-related patient outcomes, such as increased use of mental health treatment and reduced IPV risk.

Methods

Overview

The study's process for developing and testing the IPV CDS tool was based on Coulter and colleagues' CDS model development process [11]. This process describes the main elements or general stages involved in systematically developing a CDS tool, including determining the tool's scope and design, developing a prototype, testing the prototype with relevant individuals in

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an iterative process, testing the prototype under real world conditions, and final development of the tool [11]. This study focuses only on the initial three stages (i.e., determining the tool's scope and design, developing a prototype, and testing the prototype). Phase 1 Steps 1-4, described below, fall within the scope and design stage. Phase 1 Steps 5-6 fall within the prototype development stage. Phase 2 falls within the prototype testing stage.

Phase 1: Develop the IPV CDS Tool Prototype

Step 1: Identify Scope of the IPV CDS Tool

The first author (FR), during a 6-month clinical psychology rotation at the VAPAHCS WHC, directly and systematically observed providers' challenges with IPV screening and intervention, participated in discussions about these challenges at monthly meetings and daily morning rounds, and individually interviewed four providers about their experiences addressing IPV. Observations and informal evaluations resulting from these activities were captured via informal written notes and highlighted barriers to providing IPV care at the VAPAHCS WHC including provider discomfort addressing IPV and making decisions about the appropriate type or level of intervention. We used the information gathered to determine the tool's goal (to develop a step-by-step, interactive IPV CDS tool), target users (VAPAHCS WHC providers), and scope (IPV screening and intervention).

Step 2: Identify IPV Screening and Intervention Content

The IPV screening and intervention content within the tool was informed by various sources: 1) A literature review that identified current evidence-informed IPV care practices and clinical recommendations, specifically, literature related to IPV screening (e.g., who, when, and how to screen) and interventions (e.g., types of interventions, how to communicate with an individual experiencing IPV), focusing on brief interventions that may be conducted by health

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care providers in primary care. We specifically examined the literature for recommendations on which interventions may be most effective and appropriate according to IPV type (e.g., physical violence, psychological aggression), level (e.g., high vs. low), and risk of harm (e.g., high vs. low). This review informed our efforts to advance existing CDS tools for IPV by designing the tool to reveal appropriate interventions based on the patients' IPV screening results. 2) For areas in which there was not a clear recommendation given a lack of evidence, we consulted with IPV experts, including health care workers (i.e., clinical psychologists, women's health primary care providers, social workers) with IPV expertise, IPV researchers, and VA's IPV Assistance Program (IPVAP) coordinators (i.e., staff dedicated to assisting with VHA IPV screening and prevention services). 3) We also relied on the study team members' extensive IPV expertise, including the first author's (FR) IPV-focused research and clinical experience as a licensed clinical psychologist. 4) Additionally, we reviewed VHA's guidelines, developed by the IPVAP, for conducting IPV screening and intervention.

Based on these sources, we developed a chart (see Figure 1) connecting differing IPV screening results to appropriate brief IPV interventions, such as safety planning (e.g., MyPlan, an online safety planning tool [21]), providing IPV resources (e.g., Domestic Violence hotline number), making appropriate referrals to ongoing support services (e.g., mental health counseling, social services), scheduling a follow-up appointment, and providing IPV- or relationship-focused psychoeducation.

We focus the IPV CDS tool on brief IPV interventions for the following reasons: 1) There is insufficient direct evidence that screening for IPV alone, without any response or intervention, can reduce IPV-related harms. Therefore, an IPV CDS tool that focuses only on IPV screening may be inadequate [6]. 2) Brief interventions, compared to longer-term, intensive IPV

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interventions, are more feasible in primary care given time constraints. 3) Access to longer-term, intensive interventions shown to help with IPV, such as mental health treatment or other support services, can be limited immediately after IPV screening. Thus, brief interventions (e.g., providing resources and referrals) may help link patients to such services. 4) Some brief interventions show empirical support in addressing IPV. For example, MyPlan, an interactive online tool that guides individuals experiencing IPV in creating a safety plan, has been shown to increase women's use of IPV-related safety behaviors [21]. 5) The brief interventions selected for this IPV CDS tool are in line with VHA guidelines (e.g., providing resources and referrals, safety planning) [7]. Thus, the IPV CDS tool developed in this study helps address provider barriers in being able to implement VHA's existing guidelines.

The brief interventions selected for the tool are all existing interventions that have been empirically tested [6,21,24,26] or recommended in guidelines. Some of the selected brief interventions are appropriate for addressing any reported IPV risk or experience (e.g., providing IPV resources) while other brief interventions may be appropriate for addressing greater IPV risk (e.g., safety planning). Figure 1 and Phase 1 results provide a more in-depth description of the differing IPV screening results categorizations within the IPV CDS tool and the recommended brief interventions for each category.

When selecting the brief interventions, we also considered their potential harms when delivered incorrectly. Although, there is inadequate evidence to determine the harms of IPV brief interventions [6], certain brief interventions when delivered incorrectly may theoretically be harmful to individuals experiencing IPV. For example, it is contraindicated to place full responsibility on the individual experiencing IPV to create a safety plan and establish safety mechanisms without any guidance. Given this consideration, we designed the IPV CDS tool to

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recommend safety planning in conjunction with a professional (i.e., healthcare provider, DV hotline specialist) when risk of danger is high or under the guidance of MyPlan [21] if risk of danger is low.

Step 3: Incorporate IPV-related VHA and Clinic Resources

We collected IPV-related VHA and VAPAHCS WHC clinic resources that would allow us to tailor the IPV CDS tool to the VAPAHCS WHC setting (e.g., IPV patient brochures already used by the clinic, lists of phone numbers for local police stations, documents to complete mandated state reporting for IPV, elderly abuse, and child abuse). We also incorporated VHA's nationally recommended IPV screening tools (e.g., use of the Extended - Hurt, Insult, Threaten, Scream IPV screening tool (E-HITS) [12], use of a subset of items from the Danger Assessment [25] to assess risk of harm) and materials (e.g., safety plan template for IPV victimization).

Step 4: Identify CDS Components

We used the Framework for Classifying Decision Support Systems [13] to identify core components of the IPV CDS tool and determine its format, structure, and features. This framework outlines 24 axes as part of the CDS workflow, each of which we considered for potential relevance (a list of the 24 axes is in Appendix 1). For example, we determined how to deliver IPV-related information to providers (e.g., online), the reasoning method used to present information (e.g., built-in rule-based algorithms), the extent to which providers can interact with the tool (e.g., pop-down menus, fill in the blank), and the extent to which the tool can be customized for each patient (e.g., tool shows safety planning information for patients reporting higher levels of IPV but not for those reporting lower levels of IPV and no safety concerns).

Step 5: Tool Design

Using information collected in Steps 1-4, we designed the prototype, using Qualtrics, an

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online survey platform [14]. Future work will focus on adapting the IPV CDS tool to the electronic medical record system and using artificial intelligence to enhance the tool's decision-making process.

Step 6: Initial Revisions

After developing the IPV CDS tool prototype, we obtained initial informal feedback from IPV experts (i.e., two health care workers with IPV expertise, three IPV researchers, and one IPVAP coordinator). Specifically, the first author (FR) held 30 to 60-minute video-conferencing meetings with each expert and demonstrated the tool via screen share while allowing the expert to freely share their thoughts and feedback on the tool. The first author took notes during the meetings, capturing their feedback. The IPV CDS tool was revised according to this initial feedback, at which point the tool was ready for preliminary testing.

Phase 2: Obtain Preliminary Provider Feedback on the IPV CDS Tool

Recruitment

Consistent with purposeful criterion sampling [15], the sampling pool consisted of all primary care providers involved in IPV screening at the VAPAHCS WHC, a primary care clinic that specializes in women veterans' health. The VAPAHCS WHC providers have specialized training in gender-specific (e.g., pap smears) and non-gender-specific care (e.g., diabetes) from the women veteran perspective. We identified the sampling pool with help from the VAPAHCS WHC director. Recruitment involved emailing providers an invitation for study participation. We emailed providers a study invitation two additional times, each one week apart, in the case of non-response. Five of 11 invited providers declined to participate or did not respond to recruitment efforts. We recruited a total of six VAPAHCS WHC primary care providers, which was sufficient for reaching data saturation. Data saturation was demonstrated when providers in

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the final interviews (e.g., fourth, fifth, and sixth interviews) reported similar feedback to providers in the initial interviews on key questions regarding the tool's design, layout, content, features, and functionality. Thus, no additional recruitment efforts were needed. Providers that agreed to study participation scheduled an online interview and received a meeting link. Shortly before the scheduled meeting, providers were emailed a link to the IPV CDS tool.

Approach

Providers participated in a 30-60 minute interview using video-conferencing software and a semi-structured interview guide based on the Health IT Usability Evaluation Model (Health-ITUEM) [16]. Interviews were conducted by author JW, a female researcher with a masters in public health and expertise in qualitative and health services research. Providers had no relationship with or knowledge of the interviewer prior to starting the study. The interview asked providers to engage in different tasks (e.g., complete a safety plan using the tool) and answer questions related to usability and implementation (example interview questions in Appendix 2). Following the interview, providers were asked to complete the System Usability Scale (SUS) [17], a 10-item standardized measure for assessing usability (e.g., I felt very confident using the tool—*strongly disagree* (1) to *strongly agree* (5)). System Usability Scale scores range from 0 to 100 with scores above 68 demonstrating above average usability. Interviews were audio-recorded and transcribed verbatim by the VHA's Centralized Transcription Services Program.

Ethical Considerations

This quality improvement project was determined to be exempt from IRB review. Thus, providers did not receive compensation for their participation in the qualitative interviews. Despite a determination of non-research, providers gave their informed consent to participate in the interview and audio record the conversation. Providers were informed that their information

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would be kept confidential and recordings would be transcribed with identifiable information removed. We requested that providers not state their name or any other identifiable information during the interview.

Statistical Analysis

Reporting of this study's qualitative research adheres to the COnsolidated criteria for REporting Qualitative research (COREQ) Checklist (Appendix 3) [27]. Interview data were analyzed using rapid qualitative analysis [18,19] to extract actionable feedback to inform design updates and improvements. First, two authors (FR, JW) used a template to summarize each transcript and field notes taken during the interview. Summaries were used to identify patterns and illustrative quotes according to the following deductively-derived domains: design and layout (appearance); information and content (specificity, amount, and quality of information); features and functionality (technical capability); real world application (use of the tool in everyday practice); implementation (use of the tool in own practice and clinic); and overall impressions. The authors then met to review their summaries of provider feedback across domains and resolve discrepancies. Next, the authors used an Excel spreadsheet to create a matrix from these summaries, displaying subject domains and the corresponding responses and quotes from each participant. The matrix was used to create summaries of each domain that included recurring patterns, specific recommendations, and quotes.

Results

Phase 1: The IPV CDS Tool

The IPV CDS prototype is a computerized tool which WHC providers could access with the appropriate link. The tool has two main sections: 1) assessment and 2) intervention. The assessment section includes a validated IPV screening tool (i.e., the E-HITS per VHA guidelines)

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with follow-up questions, from the Danger Assessment [25], inquiring about risk of lethality due to IPV (also per VHA guidelines) to be administered to each patient during the health encounter. Information provided within the assessment section determines the information displayed in the intervention section by use of a decision tree. See Figure 1 for an illustration of the decision tree embedded within the IPV CDS tool. Overall, depending on the information provided within the assessment section, patients are categorized as having a negative or positive IPV screen. For patients who have a negative IPV screen, the IPV CDS tool recommends that providers provide universal education regarding healthy relationships as is recommended in the literature [20]. The tool offers a script and links to handouts that providers can use to engage patients in this discussion.

Patients who have a positive IPV screen are categorized into one of three categories based on the patient's reports of IPV in the past year and the risk assessment: 1) verbal/psychological abuse only and low current risk of danger due to IPV (i.e., only verbal/psychological abuse items on the E-HITS were endorsed and none of the five risk items were endorsed), 2) physical or sexual violence and low current risk of danger due to IPV (i.e., at least one of the physical or sexual violence items on the E-HITS was endorsed and none of the risk items were endorsed), and 3) any type of IPV and high current risk of danger due to IPV (i.e., at least one item on the E-HITS was endorsed and at least one of the risk items was endorsed). Before displaying information regarding the appropriate intervention, the tool shows summaries of the IPV assessment and the recommended intervention. The IPV CDS tool, then, displays separate screens for each step in the intervention process. These steps differ according to the IPV and risk category. For example, for patients in Category 1, the tool recommends that providers, with the patient's permission, provide tailored IPV psychoeducation, assess the health

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impact of IPV, hand the patient a pocket card with local IPV-related resources, schedule a follow-up appointment, and refer the patient to the IPVAP coordinator. Additionally, providers are advised to ask for methods of safe contact and consent to document IPV-related information in the electronic health record. Finally, the tool displays a tailored summary of the assessment results and intervention components that the provider can copy and paste into their clinical note. For patients in Category 2, the tool recommends an additional step for providers to inform patients of an online safety planning tool (MyPlan) [21]. For patients in Category 3, the tool recommends a second additional step by instructing providers on how to complete a safety plan with the patient or assisting the patient in calling the DV Hotline to complete the safety plan. Across all categories, the tool provides links to important documents (e.g., safety plan template, state reporting forms) and tailored example scripts incorporating trauma-sensitive language that providers can use to communicate with patients. For instance, each category includes an example script to help providers communicate screening results and deliver tailored psychoeducation appropriate for that category. The Category 1 script, for example, is tailored to include information about verbal/psychological abuse (e.g., "Half of women experience the behaviors you reported, which we call psychological/verbal abuse"). This information is expanded to include other forms of IPV in the Category 2 and 3 scripts (e.g., "About 1 of every 3 women report experiencing IPV"). The example scripts are short to help providers deliver information efficiently yet effectively. To further help provider efficiency, we noted on the psychoeducation screen that providers can skip this step if low on time.
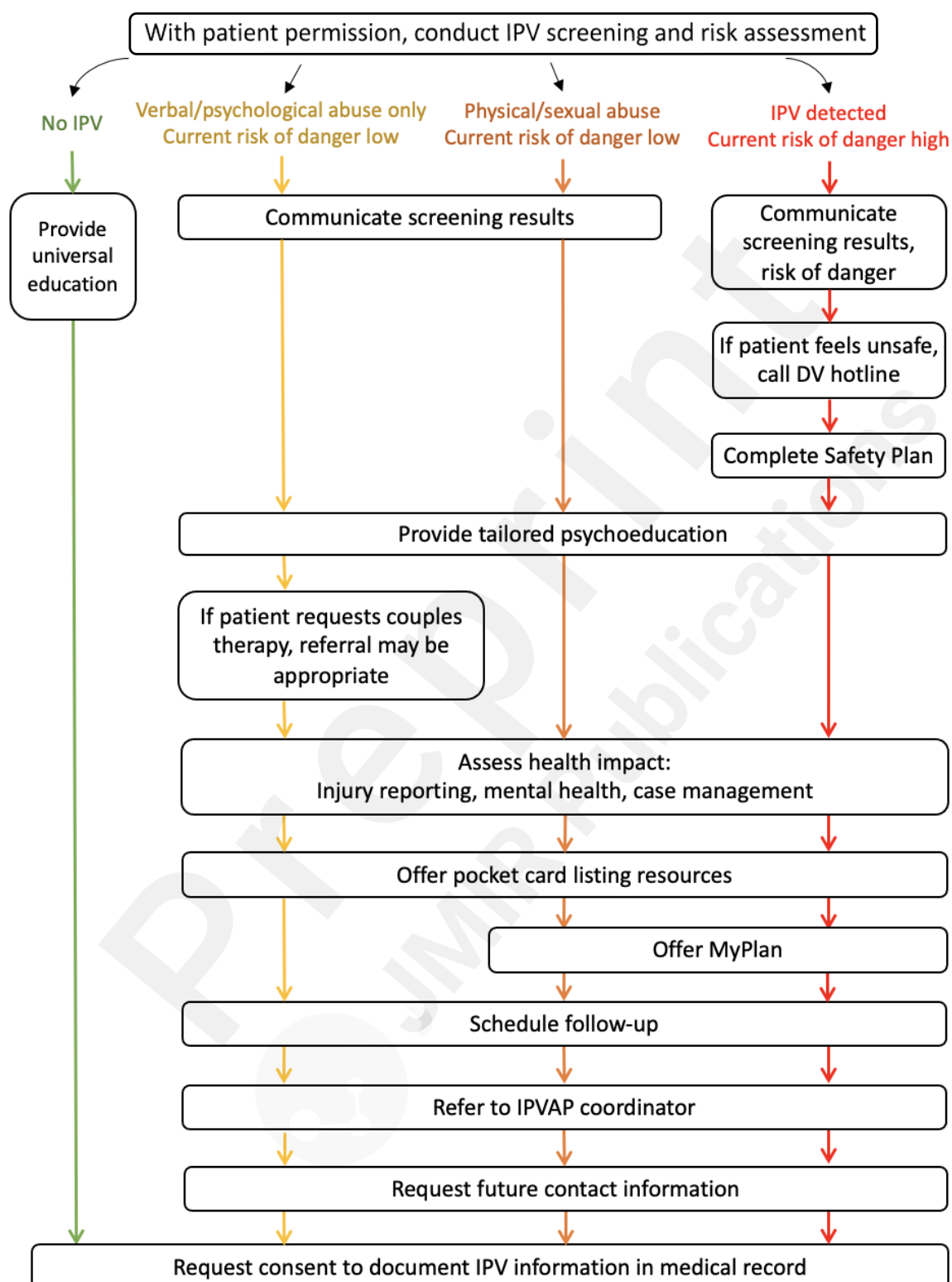
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Figure 1. Decision tree embedded within the intimate partner violence (IPV) clinical decision support tool for women's health primary care providers to conduct IPV screening and intervention with women veterans.

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Phase 2: Provider Feedback on the IPV CDS Tool

All providers interviewed were female and practicing women's health physicians. Of providers who provided demographic information (n=5 of 6), three self-identified as Asian and two as White. Similarly, three providers were between the ages of 30-39 and two were 60-69. Four providers indicated five or more years of medical experience. The mean SUS score across providers was 77.5 (SD = 12.75), suggesting good tool usability.

Next, we describe provider feedback on six core domains for assessing the preliminary tool. Table 1 shows sample quotations related to each domain.

Table 1. Qualitative feedback from Veterans Affairs Palo Alto Health Care System - Women's Health Clinic primary care providers on the intimate partner violence clinical decision support tool.

Themes	Sample Quotations
Design and Layout	
User-friendly	"I think the design is really user-friendly. Like, it's very easy to kind of go through each of the screens, and the response to each question follows in a very methodical manner. There's no part of it where I'm like—Oh, what's going on? Why am I on this screen? … The amount of information on each page is very reasonable, too." [Provider 002]
Sequence of steps	"…because you can't give a safety plan without actually knowing what's going on physically with the patient, because the plan will then depend upon what you find." [Provider 005]
Length	"If there was a way to pare this down to less screens. I think it's really, really good information." [Provider 002] "You know those PowerPoints, you begin with a bullet or two, people digest that, then you click down on other additional information. So it's not too much information right up front." [Provider 005]

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Information and Content	
Level of detail	"This is really nice for continuing knowledge of providers to know that these are the forms and these are the phone numbers, so that when, just between colleagues, as these cases come up especially in the VA, they can kind of informally disseminate that knowledge. And it's good learning for the colleagues, for this to be embedded in their heads, since they're going to be doing it at every wellness visit." [Provider 002]
Need for additional information	"…we could populate our own shelters in here, because I will guarantee you, primary care doesn't know where those shelters are." [Provider 003]
Features and Functionality	
Strengths and weaknesses of features	"…it's nice that you have the ticker at the top that kind of lets providers know how far into the process they are." [Provider 002] "I think filling the tool along the way is best. Like, anything to decrease the amount of documentation we have to do after the fact, I think is best. And if it happens as we go on, like that's the most efficient way." [Provider 001]
Real World Application	
Need for tool	"If somebody uses the tool and [a patient] screens positive, especially with the high-risk questions, it's basically going to be very, very time consuming to do this follow up, and it probably will be the bulk of the visit. That is not a bad thing, because if somebody is having that level of IPV, I don't really want to talk to them about their blood pressure. I want to talk to them about this." [Provider 006] "As a screening tool, I think it's a bit lengthy and a bit wordy, especially if you're thinking of somebody who doesn't have any exposure to this, maybe only has learned about IPV once or twice in medical school and maybe once or twice in residency. But I think it's really, really good for training, for providers to sit down and be able to read through this in a relaxed setting." [Provider 002]

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Implementation	
Feasibility	"This takes over the visit and it can put a little wrench in your schedule, but it's no different from kind of the other times that that happens in primary care…And a tool like this is really great, because it lays it all out for you." [Provider 002] "I think the physicians will be using a lot of it. I think a lot of us really buy in to screening, but don't always feel super comfortable with the next steps, if somebody discloses, so I think this would be super helpful." [Provider 006] "[Providers who are not PCPs] would want to know what information is in the tool, so that it aligns with how they talk to the patient as well, but they will not be doing the screening themselves." [Provider 001]
Competing demands	"There's a lot of screening for all kinds of primary care things…And it's really hard to address all of those things in one appointment [especially] if it's for some more acute thing." [Provider 001]
Overall Impression	
	"I think it would make [my confidence] go up, for sure, in a much more concrete way. I think I had ideas before about what I can do in the clinic, but this tool gives me concrete steps of like calling the hotline, and some of the things that I would have to search for online that I wouldn't be able to find quickly, are all in this tool." [Provider 001]

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Design and Layout

User-Friendly

Providers expressed that the tool was user-friendly due to its predictable presentation and the reasonable amount of information on each screen.

Sequence of Steps

Some providers thought the order in which steps were presented was logical but others made recommendations about how to improve the order of steps, e.g., injury reporting should come before safety planning.

Length

Providers indicated that the tool had many steps, which would take significant time to complete. Solutions suggested were including a navigation menu that lets steps be skipped, simplifying and reducing the number of steps, and including ways to opt out of steps. Another suggestion was to enable parts of the content to be hidden and expanded.

Information and Content

Level of Detail

Providers liked the tool's detailed information (e.g., example scripts for communicating risk of harm to patient, phone numbers and links to safety plan, injury reporting form) and thought it could serve as a resource where information is stored and organized. Providers thought the tool would be particularly helpful for providers who are less experienced with IPV care or may facilitate disseminating IPV-related information to other providers.

Need for Additional Information

Providers requested adding additional information, such as more details about injury, police, and child abuse reporting. Providers requested more tailored information that would facilitate the screening and intervention process (e.g., list of domestic violence shelters in the

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area).

Features and Functionality

Providers liked various features of the tool, such as the ticker at the top that indicates how much of the process they have completed or the ability to copy and paste patient disposition from the tool into a note. However, participants also indicated features to strengthen the tool, such as populating the tool along the way to decrease documentation at the end or having a menu to access specific information.

Real World Application

Providers liked the IPV CDS tool and found it clinically useful because it could help address anxiety related to not knowing how to appropriately conduct IPV screening and intervention. Providers indicated that the IPV CDS tool would help them provide IPV care, especially providers less familiar with IPV screening and intervention. Some suggested it could serve as a training tool for new providers. Providers particularly found the example scripts in the tool helpful for discussing IPV with patients. When a patient is seeking help for a non-IPV related issue, providers thought the tool could be too time consuming and leave little time to address other healthcare problems; however, providers felt it was important to prioritize IPV.

Implementation

Feasibility

Overall, providers thought implementation of the IPV CDS tool was feasible because it provides all of the necessary information to complete IPV screening and intervention. One recommendation to ensure successful implementation was to appoint a champion to teach staff about the tool.

Providers stated that primary care providers, social workers and psychologists would all

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want the IPV CDS tool, though each would use it differently, and some may not need all aspects of the tool. Most thought the tool should be implemented in primary care, while ensuring that other non-primary care providers are aware of information provided in the tool.

Competing Demands

Most providers said time to complete the tool was the main barrier to implementing the tool. Providers have to complete screenings for multiple conditions, so agenda setting and prioritizing can become a challenge.

Overall Impression

Providers liked the IPV CDS tool, found it helpful for addressing patients reporting IPV, and thought it increased their confidence in conducting IPV screening and intervention. The main drawback was the length of the tool, and providers recommended streamlining the content to accommodate the time constraints of clinic visits.

Discussion

Principal Results

This study sought to develop a novel and interactive, step-by-step CDS tool for IPV screening and intervention to be implemented in a VHA women's primary care clinic. Findings indicate that the IPV CDS tool was clinically useful and generally well-received by providers. Providers found the tool helpful and needed in their practice, and stated that it would increase their confidence in managing patients reporting IPV. Providers thought implementation of the tool in primary care was feasible. When such IPV CDS tools are successfully adopted, they may increase the quality of IPV screening and intervention in primary care and, in turn, improve IPV-related outcomes (e.g., increase use of mental health treatment, reduce IPV victimization), though, this warrants further research.

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Findings also highlighted several important enhancements that must be considered in future tool revisions or when developing similar IPV CDS tools. For instance, one issue is designing an IPV CDS tool that is comprehensive and informative yet sufficiently concise to fit the clinic workflow. When designing the current IPV CDS tool, we incorporated IPV care practices recommended by the literature, experts, and VHA guidelines. Yet, many providers indicated that the tool, when encountering high risk patients, was too time-consuming, leaving little time to address any other needs. Though some providers thought the tool was time-consuming, they also recognized the importance of dedicating the health encounter to an issue as important as IPV. Nonetheless, when CDS tools disrupt the clinic workflow, providers may be less likely to use them or more likely to override the tool recommendations, diminishing the tool's clinical value [22]. While it is critical to ensure that information displayed within the tool is concise, removing or skipping critical screening or intervention practices may negatively impact the well-being and safety of the patient. Therefore, it is essential, when designing IPV CDS tools, to find solutions that meet the needs of providers but also do not compromise patient health. Solutions include: 1) keeping only the tool components that are most critical to patient safety (e.g., using a standardized IPV screening measure and evidence-based interventions) and 2) conducting rigorous and iterative testing of the tool, improving the tool's efficiency (e.g., more concise language, easier tool navigation) until it meets the demands of providers, patients, and the clinic [22]. This helps maximize the tool's adoption by ensuring that it is feasible, acceptable to both providers and patients, and can be well integrated into the clinic workflow.

An equally important issue is designing an IPV CDS tool that is flexible (i.e., there is flexibility within the tool and with how the tool is used). Clinical decision support tools that are more flexible can help providers feel greater autonomy over their practice, rather than being told

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what to do, and thereby increases adoption of the tool [23]. When considering flexibility within

the tool, it is critical to determine features or functions that help providers flexibly navigate the

tool and have easy access to important information. For instance, providers in this study

requested a menu they could use to navigate the IPV CDS tool.

When considering flexibility with how the tool is used, it is critical to determine the

intended purposes of the tool. For example, providers in this study questioned whether the IPV

CDS tool could be used for additional purposes including as an educational tool for less

experienced providers and a check list for more experienced providers. Intimate partner violence

CDS tools that serve multiple purposes may result in greater uptake and impact but may be more

challenging to design, as they can include more sophisticated technological features and must

meet the demands of differing target audiences and contexts. One solution is to consult with

providers prior to designing the tool to determine which features and uses of the tool may be

most helpful in improving IPV care.

Even when IPV CDS tools are flexible and fit the clinic workflow, it is important that

they be specific. Providers in this study indicated wanting more specific and tailored information

in the tool (e.g., list of local shelters). While including this information can help facilitate and

increase efficiency of the IPV care process, IPV CDS tools that have highly specific and tailored

information may not be generalizable to other settings and may need frequent updates when

information changes. To help address this, it may be necessary to conduct regular monitoring of

the tool to ensure that information is still accurate [22].

The aforementioned provider concerns will be used to inform the next iteration and

testing of the IPV CDS tool. Intimate partner violence CDS tools that address these concerns

have greater adoption potential and, therefore, increased capacity to positively impact IPV care.

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Despite room for improvement, our findings suggest an important need for our IPV CDS tool to improve the quality of IPV care.

Limitations

This study had several limitations which point to areas of future research. Our findings are based on only women's health physicians and one clinic. While this clinic provided us with an ideal setting from which to obtain feedback from providers, future studies should gather data from other settings and differing providers who also conduct IPV care. Future usability evaluations of the tool could also gather additional provider feedback on tool features and content that were not a direct focus of this study, such as the psychoeducation content. As our focus was only on usability of the IPV CDS tool, additional evaluation is needed examining potential improvements in clinical outcomes, such as increased IPV screening by providers and decreased IPV victimization among patients. We did not interview patients, thus, research is also needed examining patient perspectives on the acceptability of the IPV CDS tool.

Furthermore, this study does not offer a solution to situations where an abusive partner refrains from leaving the patient alone in a health encounter, thus preventing providers from completing IPV screening and intervention. Asking about IPV in front of an abusive partner may result in underreporting of IPV or, if reported, can endanger the patient's life due to potential partner retaliation. To protect the patient, the IPV screening and intervention steps outlined in the IPV CDS tool need to be completed privately and confidentially. This is a significant limitation in the IPV screening and intervention process given that these patients, who are likely experiencing severe IPV, will not have access to appropriate IPV care. We recommend that clinic staff discuss and implement creative solutions to help address this problem. For example, the VAPAHCS WHC displays informational IPV posters in the women's restroom stalls.

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Additionally, there are stacks of pocket cards with IPV resources in the women's restroom for women veterans to take with them. It may also be possible to develop an IPV CDS tool that uses artificial intelligence to screen for IPV using behavioral and verbal observations. If IPV is detected in these cases, providers would need to discreetly intervene, such as providing IPV resources via a general health brochure or a follow-up phone call.

Implications for Practice and/or Policy

This study offers an example of how other clinics and healthcare systems can adapt the current interactive, step-by-step IPV CDS tool to potentially help primary care providers conduct IPV screening and intervention. While this study focuses on primary care due to VHA's recommendations for IPV screening in primary care, it is important to consider other health care settings where providers may benefit from an IPV CDS tool, such as providers in mental health specialty clinics. The IPV CDS tool will likely need to be tailored to each setting depending on providers' needs. For example, providers in mental health specialty clinics may have time during the health encounter to conduct more in-depth IPV screening and extensive interventions. This study also highlights various challenges that may emerge when creating interactive, step-by-step IPV CDS tools regardless of the setting and offers solutions to address these challenges. Findings demonstrate that interactive, step-by-step CDS tools for IPV screening and intervention are promising in addressing some provider barriers to IPV screening and intervention. If adopted, such tools have the potential to transform IPV screening and intervention in health care settings by standardizing the process, increasing the frequency at which screening is performed, and guaranteeing that patients experiencing IPV are receiving the recommended care to improve outcomes. However, additional research is needed to further determine their clinical utility in improving IPV screening and intervention rates, and patient outcomes (e.g., increased patient

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safety, reduced IPV risk, increased referrals to mental health treatment).

Conclusions

We developed a novel clinical decision tool to assist women's health care providers with IPV screening and intervention. Initial user experiences are encouraging. Widespread adoption of similar decision tools may help streamline IPV screening and intervention processes and increase use of best practices. When screening or best practices are ignored, even by well-intentioned providers, patients experiencing IPV are put at increased risk of harm.

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Contributors

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Data Availability

The data sets generated during and/or analyzed during this study are available from the corresponding author on reasonable request.

Disclosure

Generative AI was not used in any portion of the manuscript writing.

Conflict of Interest

The authors declare that they do not have a conflict of interest.

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Abbreviations

E-HITS: Extended - Hurt, Insult, Threaten, Scream

Health-ITUEM: Health IT Usability Evaluation Model

IPV: Intimate partner violence

IPVAP: Intimate Partner Violence Assistance Program

IRB: Institutional Review Board

SUS: System Usability Scale

VAPAHCS: Veterans Affairs Palo Alto Health Care System

VHA: Veterans Health Administration

WHC: Women's Health Clinic

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Category	Axes
Context	Clinical setting
	Clinical task
	Unit of optimization
	Relation to point of care
	Potential external barriers to action
Knowledge/ Data Source	Clinical knowledge source
	Data source
	Data source intermediary
	Data coding
	Degree of customization
	Update mechanism
Decision Support	Reasoning method
	Clinical urgency
	Recommendation explicitness
	Logistical complexity of recommended action
	Response requirement
Information Delivery	Delivery format
	Delivery mode
	Action integration
	Delivery interactivity/explanation availability
Workflow	System user
	Target decision maker
	Output intermediary
	Degree of workflow integration

Appendix 1: The 24 axes in the framework for classifying decision support systems.

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Appendix 2: Example interview questions for obtaining provider feedback on the clinical decision support tool.

Background
1. Do you regularly screen patients for intimate partner violence? If so,
    a. What is your current practice for screening patients for intimate partner violence?
    b. How many patients would you say you've screened in the past month?
2. On a scale of 1 to 5, where 1 is not confident at all and 5 is very confident, how confident do you feel at this time in your ability to screen for intimate partner violence and appropriately intervene if there is a positive screen?

Task 1: Tool click-through
1. What are your first thoughts about this tool?
2. What do you think of the design and layout? Probes if needed:
    a. What are your thoughts on being able to find what you're looking for? Being able to get around in the tool?
    b. What do you think about the amount of information provided?

Task 2: Review recommendations screen
1. What are your thoughts about the information on this page?
2. Based on this screen, what do you do next?
3. Is there anything you'd change about this screen?

Task 3: Make a Safety Plan
1. How confident do you feel about being able to complete a safety plan with your patient?
    a. Are there any barriers to being able to complete the safety plan?
2. What could be added or changed that would make this screen more helpful to you?

Task 4: Review talking points for communicating risk of harm
1. How helpful are these talking points in communicating risk of IPV-related harm to patients? Probes if needed:
    a. What could be added or changed to help you communicate risk of IPV-related harm?

Task 5: Review summary screen
1. How useful is this information?
2. What could be added or changed?

Implementation
1. Now that you have a sense of what the tool does and how to use it, do you think you would be able to use this tool in your women's health practice? Why or why not?

2. How do you think the intimate partner violence screening tool will impact the workflow in your setting?

3. In your setting, who do you think will be most likely to want this tool implemented? Who will be most likely to use it?

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4. What level of support is there for improving intimate partner violence screening from clinic and/or facility leaders in your setting?

5. What kinds of high-priority initiatives or activities are already happening in your setting that may impact implementation of the tool?

6. At the beginning of the interview, you indicated that your confidence level on a scale of 1 to 5 regarding your ability to screen for intimate partner violence and appropriately intervene in the case of a positive screen is a ___. Do you believe that using this tool would change your confidence level? How would you rate your confidence level now, on a scale of 1 to 5?

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Supplementary Files

Figures

Decision tree embedded within the intimate partner violence (IPV) clinical decision support tool for women's health primary care providers to conduct IPV screening and intervention with women veterans.
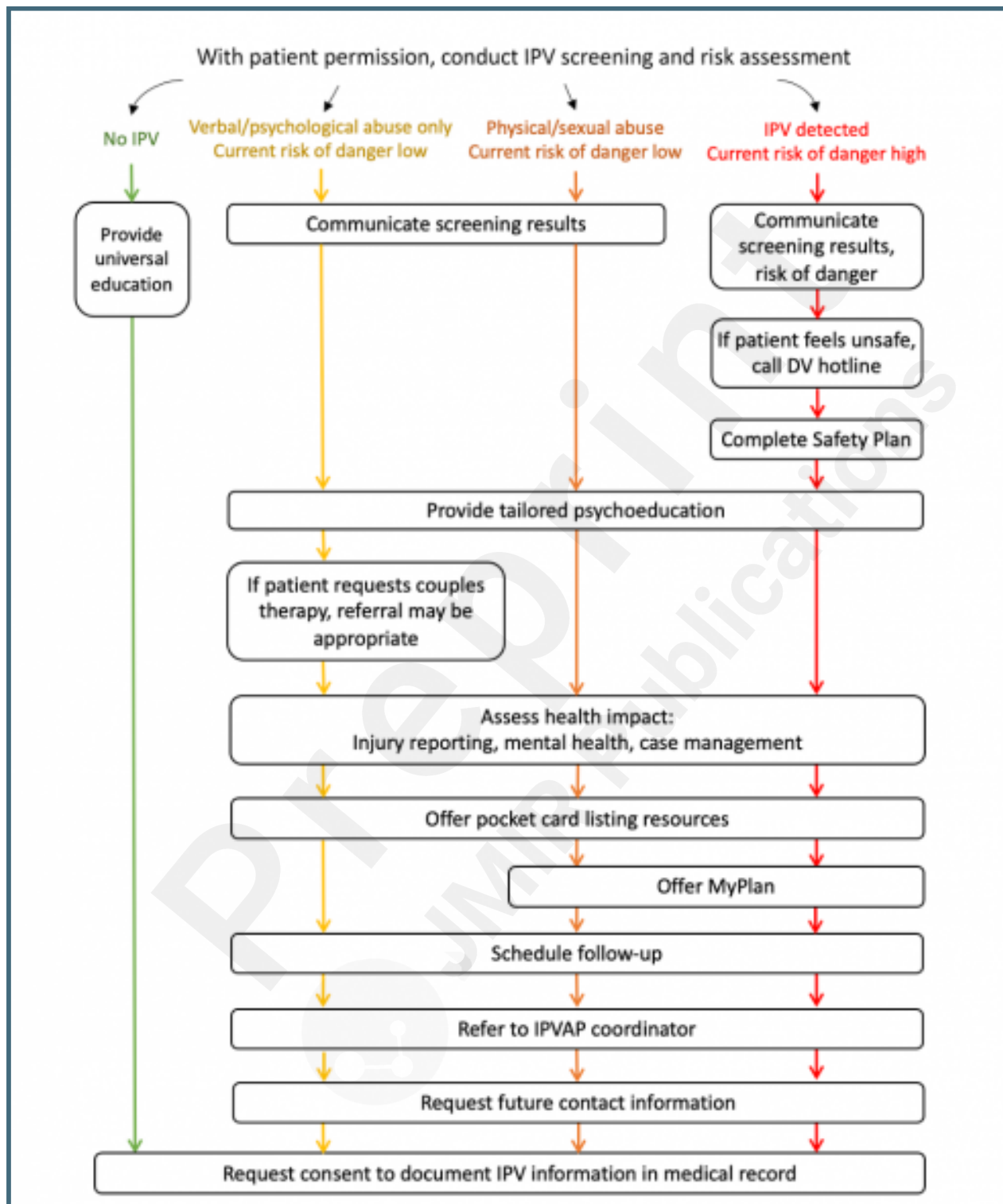
Multimedia Appendixes

The 24 axes in the framework for classifying decision support systems.
URL: http://asset.jmir.pub/assets/e244369aaa88700848b5ceed649f058c.docx

Example interview questions for obtaining provider feedback on the intimate partner violence clinical decision support tool.
URL: http://asset.jmir.pub/assets/4c27fbae8d12d19fc8d713a1d9e7cbab.docx

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist.
URL: http://asset.jmir.pub/assets/803462b8caa8272ea7ac1f2b57896268.pdf