



# Intimate Partner Violence: Prevalence Among U.S. Military Veterans and Active Duty Servicemembers and a Review of Intervention Approaches

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## **PREFACE**

Quality Enhancement Research Initiative's (QUERI's) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) managers and policymakers, as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout VA.

QUERI provides funding for four ESP Centers and each Center has an active VA affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence,
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures, and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of QUERI Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at [nicole.floyd@va.gov](mailto:nicole.floyd@va.gov).

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# EVIDENCE REPORT

## INTRODUCTION

Intimate partner violence (IPV) encompasses a range of physical, sexual, or psychological harms or stalking behavior by a current or former partner across a continuum of severity. In the United States, IPV poses a significant public health burden that affects both men and women. Over a third (35.6%) of women and a fourth (28.5%) of men in the United States have experienced rape, physical violence, or stalking by an intimate partner in their lifetime.<sup>1</sup>

Outcomes associated with IPV include a wide range of social, physical, and mental issues such as family dissolution, adverse pregnancy outcomes, mental health issues (depression, posttraumatic stress disorder [PTSD], anxiety), incarceration, and death.<sup>1-5</sup> IPV affects many facets of society including medical, mental health, social services, and criminal justice systems. Moreover, productivity losses and costs attributable to IPV are significant; estimates exceed 13.5 million workdays lost and \$8.3 billion spent in the United States each year for violence perpetrated against women.<sup>6</sup>

Military service has unique psychological, social, and environmental factors that may contribute to elevated risk of IPV among active duty servicemembers and Veterans. Multiple deployments, family separation and reintegration,<sup>7</sup> demanding workloads at home and while on duty, histories of head trauma, mental illness, and substance abuse<sup>8</sup> can contribute to partner conflict and elevated risk of IPV among active duty servicemembers, Veterans, and their intimate partners.<sup>9-12</sup> Several studies have estimated the prevalence of IPV among active duty servicemembers and Veterans; rates of past-year perpetration of IPV ranged from 13.3 percent to 47 percent among male active duty servicemembers and 13.5 percent to 42 percent among male Veterans.<sup>10,13-15</sup> Thus, IPV presents a common and important problem among potential users of the VA healthcare system. Rates of IPV among military and Veteran populations likely vary by gender and race, as they do with civilian populations. Additionally, era of service may be a unique moderator of IPV prevalence among Veterans.<sup>16</sup>

Currently the VA does not have a comprehensive national program to address IPV. Thus, the VA convened the Domestic Violence Task Force to define the scope of, and design a plan for evaluating, domestic violence and IPV among Veterans. In order to support the goals and mission of this task force, the Durham VA Evidence-based Synthesis Program conducted a systemic review of the literature to synthesize the evidence on the prevalence of IPV among active duty servicemembers and Veterans and to conduct an evidence synthesis of the systematic review (SR) literature on intervention strategies to address IPV.

## METHODS

### TOPIC DEVELOPMENT

This review was commissioned by the VA's Evidence-based Synthesis Program. The topic was nominated after a topic refinement process that included a preliminary review of published peer-reviewed literature, consultation with internal partners and investigators, and consultation with key stakeholders. We further developed and refined the key questions (KQs) based on a preliminary review of published peer-reviewed literature in consultation with VA and non-VA experts.

The final KQs were:

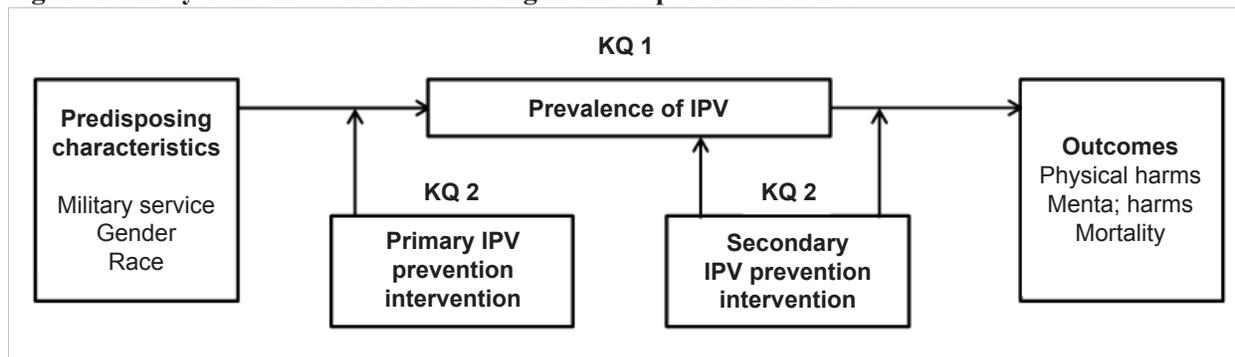
**KQ 1.** What is the prevalence of intimate partner violence among Veterans and active duty servicemembers, and does the prevalence vary by cohort (e.g., Vietnam era, OEF/OIF/OND era), gender, or race?

**KQ 2.** For persons who are at risk for, experience, or commit intimate partner violence, what interventions are associated with decreased exposure to intimate partner violence and its associated physical harms, mental harms, or mortality?

### ANALYTIC FRAMEWORK

We followed a standard protocol for all steps of this review; certain methods map to the PRISMA checklist.<sup>17</sup> Our approach was guided by the analytic framework shown in Figure 1.

Figure 1. Analytic framework for assessing intimate partner violence



Abbreviations: IPV=intimate partner violence; KQ=key question

### SEARCH STRATEGY

We used different literature search strategies for KQ 1 and KQ 2. Prevalence of IPV (KQ 1) was approached using primary research articles so that we could compare populations and trends over time. Treatment interventions (KQ 2) were approached through a synthesis of SRs because there were numerous potential intervention strategies and several current, high-quality SRs available on this topic. For prevalence, we searched MEDLINE® (via PubMed®), CINAHL®, PsycINFO®, and Social Sciences Citation Index (a subset of Web of Science) from inception through

December 2012 for peer-reviewed publications providing prevalence rates for IPV. However, through the peer review process we were alerted to one citation that was not identified in our original search strategy. Consequently, we broadened our search strategy such that it would identify this new citation. We then updated our PubMed, CINAHL, PsycINFO searches in June 2013. (We did not update the Social Sciences Citation Index in June 2013 because this database did not yield any relevant citations not identified in the other databases during the initial search.) For treatment intervention strategies, we searched PubMed, EMBASE<sup>®</sup>, CINAHL, PsycINFO, and the Cochrane Database of Systematic Reviews for peer-reviewed SRs from January 2007 through December 2012.

We developed our search strategy in consultation with an experienced search librarian. We used the National Library of Medicine's Medical Subject Headings (MeSH) keyword nomenclature and text words for populations of interest, types of intimate partner abuse (Spouse Abuse [Mesh], Domestic Violence[Mesh]), intervention strategies (screening, counseling, rehabilitation), and validated search terms for both prevalence statistics and SRs. We limited both searches to articles published in the English language involving human subjects 18 years of age and older. The KQ 1 search was limited to Veterans and military and active duty populations. The KQ 2 search was limited to SRs with search dates on or after January 1, 2007. The full search strategy is provided in Appendix A.

We supplemented the electronic searches with a manual search of citations from a set of key primary and review articles.<sup>2,13,18-32</sup> The reference list for identified pivotal articles was hand-searched and cross-referenced against our library in order to retrieve additional articles. All citations were imported into two electronic databases (for referencing, EndNote<sup>®</sup> Version X5, Thomson Reuters, Philadelphia, PA; for data abstraction, DistillerSR; Evidence Partners Inc., Manotick, ON, Canada).

## **STUDY SELECTION**

Using prespecified inclusion and exclusion criteria, two reviewers assessed titles and abstracts for relevance to the KQs. Full-text articles identified by either reviewer as potentially relevant were retrieved for further review and examined by two reviewers against the eligibility criteria. Disagreements on inclusion, exclusion, or the major reason for exclusion were resolved by discussion or by a third reviewer. The criteria to screen articles for inclusion or exclusion at both the title-and-abstract and full-text screening stages for KQ 1 and KQ 2 are detailed in Table 2. Appendix B contains bibliographic information for all included studies.

**Table 2. Summary of inclusion and exclusion criteria**

Study Characteristic	Inclusion Criteria	Exclusion Criteria
Population	KQ 1: U.S. Veterans and active duty servicemembers KQs 1 and 2: Adults (≥18 years of age)	KQs 1 and 2: <ul style="list-style-type: none"> <li>• &lt;18 years of age</li> <li>• Incarcerated populations</li> </ul>
Interventions	KQ 1: Not applicable KQ 2: <ul style="list-style-type: none"> <li>• Primary IPV prevention strategies (e.g., marital conflicts, communication, interaction-style counseling)</li> <li>• Secondary IPV prevention strategies focused on reducing rates of IPV among those who commit or experience IPV (e.g., screening, counseling to reduce perpetration or victimization, emergency shelters, training of health care or law enforcement personnel)</li> </ul>	KQ 2: Changes to federal, state, or local laws
Comparators	KQ 1: Not applicable KQ 2: Usual care or other primary or secondary IPV prevention interventions	None
Outcomes	KQ 1: <ul style="list-style-type: none"> <li>• Proportion of U.S. military servicemembers or Veterans who have committed IPV</li> <li>• Proportion of U.S. military servicemembers or Veterans who have experienced IPV</li> <li>• Outcomes measured by self-report or interviewer-based assessment</li> </ul> KQ 2: Study must report at least one of the following: <ul style="list-style-type: none"> <li>• Change in IPV perpetration</li> <li>• Rates of IPV victimization</li> <li>• Identification of IPV</li> <li>• Referral for services related to IPV</li> <li>• Treatment or services received for IPV</li> <li>• Change in attitudes toward IPV (for primary prevention only)</li> </ul> KQ 2: Secondary outcomes of interest: <ul style="list-style-type: none"> <li>• IPV-associated physical harms (e.g., injuries, sexual assault) or mental harms (e.g., PTSD)</li> <li>• IPV-related mortality</li> <li>• Markers of healthy relationship norms (e.g., satisfaction, communication, conflict-resolution skills)</li> </ul> Outcomes measured by self-report or interviewer-based assessment, except referrals and treatment rates, which may be assessed by chart reviews	KQ 1: Assessment of any aspect of IPV based only on chart review or assessment of administrative data KQ 2: Reports only relationship outcomes (e.g., conflict-resolution skills), physical harms (e.g., gastrointestinal distress, chronic pain), or mental health harms (e.g., depression, PTSD) and does not provide outcome data on rates of IPV, intermediate IPV screening outcomes of interest, or attitudes toward IPV

Study Characteristic	Inclusion Criteria	Exclusion Criteria
Timing	KQ 1: <ul style="list-style-type: none"> <li>• Lifetime exposure to IPV</li> <li>• IPV exposure that occurred during service in the military</li> <li>• IPV exposure that occurred after discharge from the military</li> </ul> KQ 2: End of treatment or longer	KQ 2: No postintervention exposure assessments
Setting	KQ 1: <ul style="list-style-type: none"> <li>• Military settings (domestic or abroad)</li> <li>• Population or community settings</li> </ul> KQs 1 and 2: <ul style="list-style-type: none"> <li>• Outpatient general medical settings (e.g., internal medicine, family medicine, etc.)</li> <li>• VA health care settings for outpatient care</li> <li>• Emergency medicine</li> <li>• Outpatient mental health</li> <li>• Mixed clinical settings (if of interest)</li> <li>• Community settings</li> </ul>	KQs 1 and 2: Correctional facilities and hospital inpatient setting
Study designs	KQ 1: <ul style="list-style-type: none"> <li>• Original data</li> <li>• Prospective and retrospective observational studies</li> <li>• Cross-sectional studies</li> </ul> KQ 2: Systematic review (i.e., methods section has search strategy and data synthesis plan)	KQ 1: <ul style="list-style-type: none"> <li>• Not a research study (e.g., editorial, letter)</li> <li>• N ≤99</li> </ul> KQ 2: Not a systematic review (e.g., narrative review)
Publications	KQ 1: <ul style="list-style-type: none"> <li>• Peer-reviewed research articles<sup>a</sup></li> <li>• English-language<sup>b</sup></li> <li>• Full publications</li> </ul> KQ 2: <ul style="list-style-type: none"> <li>• English-language</li> <li>• Peer-reviewed articles</li> <li>• Full publications</li> <li>• Relevant good- or fair-quality systematic review</li> <li>• Published from January 1, 2007 forward<sup>c</sup></li> </ul>	KQs 1 and 2: <ul style="list-style-type: none"> <li>• Abstract only</li> <li>• Not English-language</li> </ul> KQ 2: <ul style="list-style-type: none"> <li>• Abstract only</li> <li>• Not English-language</li> <li>• Poor-quality systematic review</li> <li>• Published prior to 2007</li> </ul>

Abbreviations: KQ=key question; RCT=randomized controlled trial

<sup>a</sup>Peer-reviewed article is defined as a published article of original research that has been written by scientists or professionals in a field of study; has been evaluated for scientific quality and correctness by other experts in the same field who are outside of the publishing or sponsoring organization; and has been reviewed either by the author’s identity being blinded or the reviewers’ identity being blinded, or both.

<sup>b</sup>Given the high volume of English-language publications (including the majority of known important studies), we have excluded non-English-language articles because the resources required to translate non-English-language articles would not be justified by the low potential likelihood of identifying relevant data unavailable from English-language sources.

<sup>c</sup>We originally searched MEDLINE from January 1, 2002, to the present. Results of earlier reviews were captured in the findings of more recent reviews. Thus, we revised our search strategy to include systematic reviews only from January 1, 2007, forward.

## **DATA ABSTRACTION**

Before general use, the abstraction form templates, designed specifically for this report, were piloted on a sample of included articles and revised to ensure that all relevant data elements were captured and that there was consistency and reproducibility between abstractors. We gave particular attention to how IPV was defined in each study, the study setting, the measurements used to assess outcomes and mode of administration, and the characteristics of the patient (KQ 1) or study (KQ 2). Select data from published reports were then abstracted into the final abstraction form by one trained reviewer. All data abstractions were confirmed by a second reviewer. Disagreements were resolved by consensus or by obtaining a third reviewer's opinion when consensus could not be reached.

We abstracted the following key information for each included study, if reported:

- Study design
- Population characteristics
- Inclusion criteria
- Exclusion criteria
- Funding source
- Outcomes

Specifically for the prevalence studies for KQ 1, we abstracted:

- Enrollment (for prevalence data, including recruitment dates)
  - Assessed for eligibility
  - Number eligible
  - Completed survey or other primary strategy
  - Completed followup
- Study site, setting, and/or geographic location
- Assessment of IPV measurement
  - Name of IPV survey instrument
  - Mode of administration for IPV survey instrument
  - Types of abuse captured by IPV survey instrument
  - Description of person reporting IPV on survey
  - Definition of IPV recorded by the survey
  - Time points of IPV occurrence recorded (e.g., past year, lifetime, etc.)
- Applicability to populations and settings of interest

Specifically for the SRs for KQ 2, we abstracted:

- SR design features
  - Databases searched and search date
  - Study-level inclusion and exclusion criteria
  - Number of primary studies included for each KQ
  - Methods of analysis, assessment of heterogeneity, and publication bias
  - Strength of evidence assessment
- Results of the review
  - Range of mean age
  - Range of sex distribution
  - Range of race distribution for white, African American, and Hispanic

- Number of studies and participants for each KQ
- Synthesis of pertinent outcomes
- Subgroup analysis by gender, race, or era of service
- Publication bias
- Sensitivity analysis
- Strength of evidence
- Author conclusions

## **QUALITY ASSESSMENT**

We abstracted data necessary to assess the quality of included studies. Across all included studies, quality criteria were applied for each study by two independent reviewers. Disagreements were resolved between the two reviewers or, when needed, by arbitration from a third reviewer. For prevalence studies, we adapted a previously published tool<sup>33</sup> developed to assess the quality of prevalence studies. Key domains of quality assessed were selection bias, nonresponse bias, measurement bias, and biases related to analysis. Based on these criteria, a summary judgment of low, moderate, or high risk of bias was assigned to each study (Appendix C).

We also assessed the quality of SRs using criteria adapted from the AMSTAR measurement tool.<sup>34</sup> These included the following key criteria: review assesses a focused clinical question, search methods are adequate for replication and are comprehensive, selection bias is avoided, data are abstracted reliably, characteristics of primary literature are reported and quality is assessed appropriately, results are synthesized using appropriate methods, publication bias is assessed, conflict of interest is reported, and conclusions are supported by results. Based on these criteria, SRs were categorized as good, fair, or poor quality (Appendix C). Poor-quality SRs were excluded.

## **DATA SYNTHESIS**

### **Studies of IPV Prevalence (KQ 1)**

To assess prevalence, we critically analyzed the included primary studies to compare their characteristics, methods, and findings. We then determined the feasibility of completing a quantitative synthesis (i.e., meta-analysis) by exploring the volume of relevant literature, the completeness of the results reporting, and the conceptual homogeneity of the studies. When a meta-analysis was appropriate, we used random-effects models to quantitatively synthesize the available evidence for prevalence rates. For meta-analysis, we excluded studies that were conducted in special populations, such as cohorts recruited from prenatal clinics and mental health clinics. When studies gave results only by subgroup (males, females), we combined subgroups only when the combined group represented the total study population. We estimated pooled prevalence with 95% confidence intervals (95% CIs) using a random-effects model when study designs and outcomes reported were similar.

We anticipated heterogeneity of effects; thus, we conducted subgroup analyses by key variables hypothesized to influence prevalence estimates (i.e., gender, race, IPV severity, era of service) and pooled subgroup estimates using mixed-effects models where appropriate.<sup>35</sup> To assess if prevalence rates varied by era of service (e.g., OEF/IOF/OND), we conducted moderator

analysis by date of cohort recruitment (i.e., era of cohort). Date of cohort recruitment was used as a proxy for era of service and was dichotomized as pre-2001 and post-2001. We tested for statistical heterogeneity using graphical displays and test statistics ( $I^2$  statistics). The  $I^2$  describes the percentage of total variation across studies due to heterogeneity (or inconsistency across studies) rather than to chance.<sup>36</sup> Heterogeneity was categorized as low, moderate, or high based on  $I^2$  values of 25 percent, 50 percent, and 75 percent, respectively. We also conducted an influence analysis to assess the individual effects of each included study in the meta-analyses. In an influence analysis, each study is systematically removed one at a time, and a new pooled estimate is calculated to provide an estimate of the pooled prevalence without the study. When quantitative synthesis was not possible (less than three studies), we summarize findings qualitatively. All quantitative analyses were conducted using OpenMeta[Analyst] software ([http://www.cebm.brown.edu/open\\_meta](http://www.cebm.brown.edu/open_meta)).

### **Systematic Reviews of IPV Intervention Strategies (KQ 2)**

Quantitative analysis of the SRs was not possible due to the limited number (n=6) and diversity of the included studies and outcomes. Instead, we grouped reviews by intervention strategy and then summarized the key characteristics, methods, and findings. If findings or conclusions differed importantly across reviews, we analyzed potential reasons for discrepancies such as review inclusion/exclusion criteria, the primary studies included, differences in outcome definition, analytic approach, and conflict of interest. When synthesizing results, we gave more qualitative weight to recent reviews of higher overall quality (e.g., good vs. fair) and to reviews that included higher quality study designs (e.g., RCTs vs. retrospective observational studies).

## **RATING THE BODY OF EVIDENCE**

In addition to rating the quality of individual prevalence studies and SRs of treatment strategies, we evaluated the overall quality of the evidence for each KQ as described in the Agency for Healthcare and Research Quality's (AHRQ's) "Methods Guide for Effectiveness and Comparative Effectiveness Studies."<sup>37</sup> In brief, this approach requires assessment of four domains: risk of bias, consistency, directness, and precision. Additional domains considered were strength of association (magnitude of effect) and publication bias. For risk of bias, we considered basic (e.g., RCT) and detailed study design (e.g., adequate randomization). We used results from meta-analyses when evaluating consistency (forest plots, tests for heterogeneity), precision (CIs), strength of association (odds ratios), and publication bias (clinicaltrials.gov survey). These domains were considered qualitatively, and a summary rating of high, moderate, low, or insufficient strength of evidence was assigned after discussion by two reviewers. This four-level rating scale consists of the following definitions:

- **High**—Further research is very unlikely to change our confidence on the estimate of effect.
- **Moderate**—Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- **Low**—Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.

- **Insufficient**—Evidence on an outcome is absent or too weak, sparse, or inconsistent to estimate an effect.

When a rating of high, moderate, or low was not possible or was imprudent to make, a grade of insufficient was assigned.<sup>38</sup> We also considered the risk of publication bias. Publication bias was addressed through graphical analysis (e.g., funnel plots) for KQ 1 (prevalence of IPV) and a careful search of [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov) (March 2013) for identification of any study completed but unpublished or ongoing for both KQs (prevalence studies and SRs on intervention strategies).

## **PEER REVIEW**

A draft version of the report was reviewed by technical experts and clinical leadership. A transcript of their comments can be found in the appendix, which elucidates how each comment was considered in the final report.

## **RESULTS**

### **LITERATURE SEARCH**

The flow of articles through the literature search and screening process is illustrated in Figure 2 (IPV prevalence) and Figure 3 (IPV interventions). We identified 654 unique citations from a combined search MEDLINE via PubMed (n=123), CINAHL (n=42), PsycINFO (n=59), and Social Sciences Citation Index (SSCI), a subset of the Web of Science database (n=430), from inception through December 2012. All databases except SSCI were updated in June 2013. Manual searching of included study bibliographies and review articles identified 15 more citations for a total of 669 citations. After applying inclusion and exclusion criteria at the title-and-abstract level, 106 full-text articles were retrieved for further evaluation. Of these, 67 were excluded at the full-text screening stage, leaving 39 articles representing 25 unique primary studies and 14 companion articles for data abstraction.

For intervention strategies (KQ 2), we searched MEDLINE via PubMed (n=1404), EMBASE (n=562), CINAHL (n=254), PsycINFO (n=37), and the Cochrane Database of Systematic Reviews (n=229) for peer-reviewed SRs from January 2007 through December 2012; an updated search was conducted in March 2013 for a total of 2486 articles. After applying inclusion and exclusion criteria at the title-and-abstract level, 96 full-text SRs were retrieved for further evaluation. Of these, 90 were excluded at the full-text screening stage, leaving 6 SRs for data abstraction.

Figure 2. Literature flow for IPV prevalence studies (KQ 1)

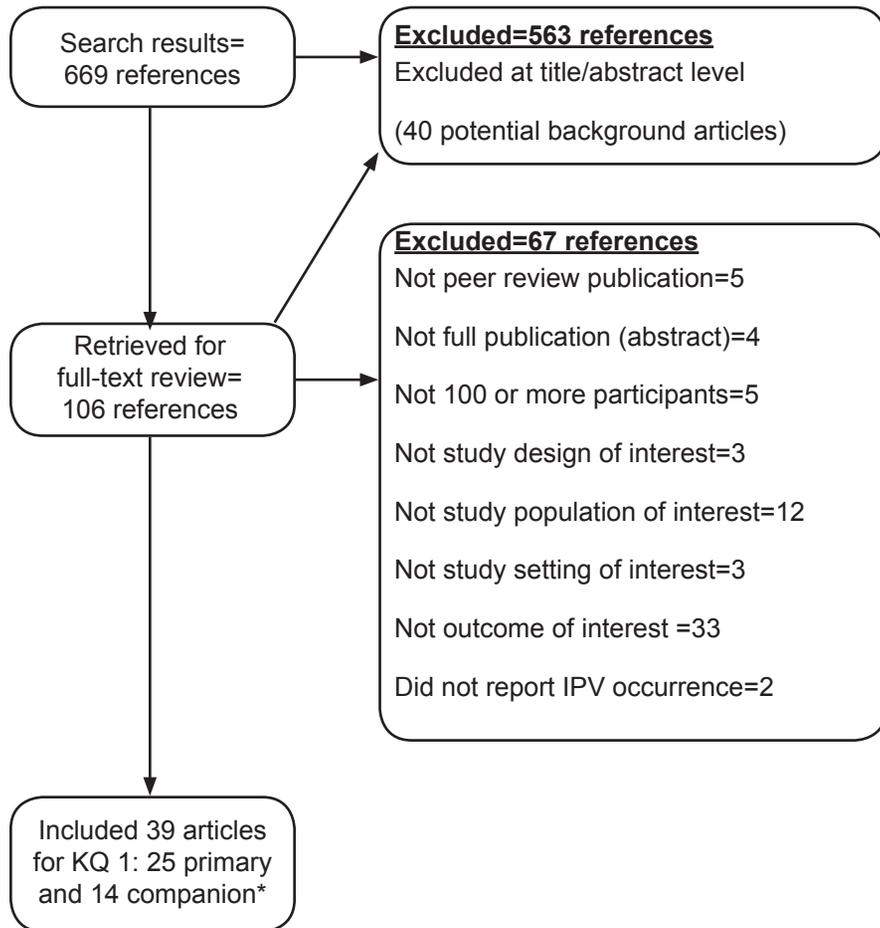
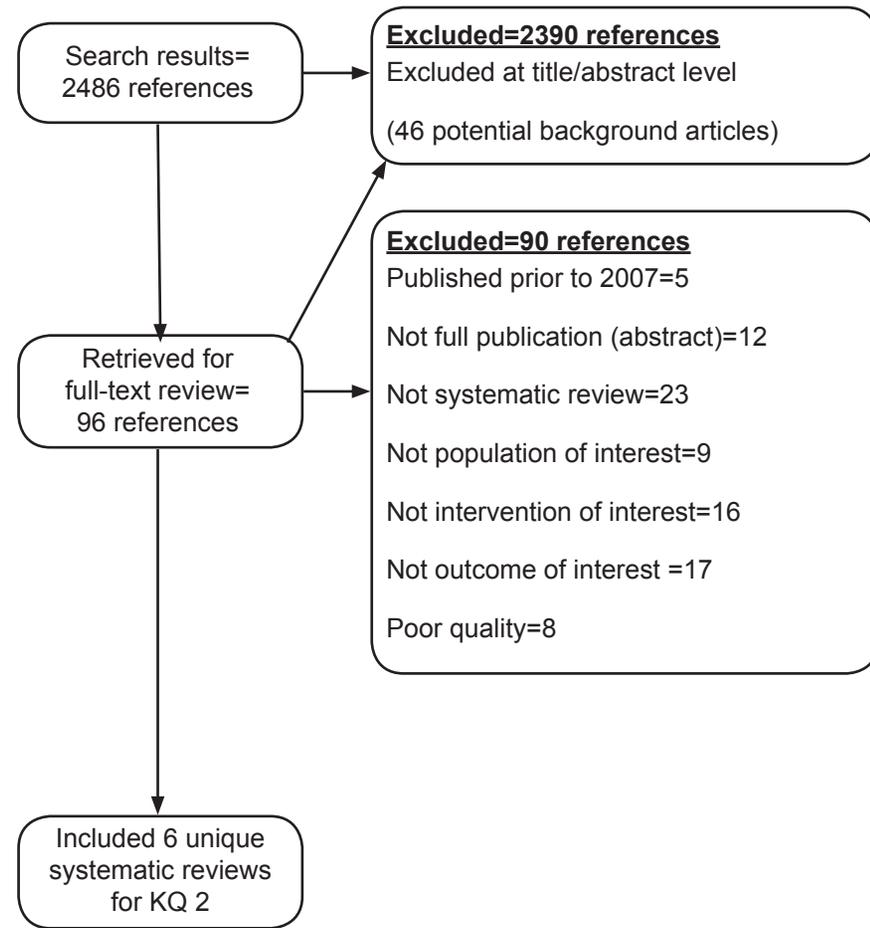


Figure 3. Literature flow for IPV systematic reviews (KQ 2)



\*See glossary for definition of companion articles.  
Abbreviations: KQ=key question

## **KEY QUESTION 1. What is the prevalence of intimate partner violence among Veterans and active duty servicemembers, and does the prevalence vary by cohort (e.g., Vietnam era, OEF/OIF/OND era), gender, or race?**

### **Key Points**

- The overall prevalence of 12-month IPV perpetration among active duty servicemembers was 22 percent, and victimization was 30 percent. Both estimates had high heterogeneity.
- Among active duty populations, moderator analysis by era of service, IPV severity, and gender all showed group differences, but each pooled subgroup estimate also had high heterogeneity. Thus, the variability in prevalence is likely due to a combination of factors.
- Of the 12 studies that assessed IPV among Veterans, only 5 assessed IPV perpetration. Populations and outcomes were too heterogeneous to meta-analyze. The prevalence of IPV perpetration within the last year ranged considerably (15% to 60%). However, samples consisted of specialized populations (e.g., Veterans seeking relationship help, newly returning OEF/OIF Veterans referred to behavioral health) with a high mental health burden, or were gender-specific samples.
- Only eight studies assessed IPV victimization among Veterans. None of these studies provided estimates for male Veterans, and only two provided an estimate of 12-month prevalence; estimates ranged from 7 percent to 12 percent. Among women Veterans, the prevalence of lifetime IPV victimization was 35 percent. The estimate had high heterogeneity, but limited data precluded moderator analysis to query for subgroup differences.

### **Description of Included Studies**

We identified 25 primary studies (with 14 linked companion articles, for a total of 39) for IPV prevalence (details shown in Table 3). Thirteen of these (encompassing 25 articles<sup>12,13,15,18,39-59</sup>) evaluated IPV prevalence among U.S. active duty servicemembers (n=88,568). Twelve (encompassing 14 articles<sup>7,27,60-71</sup>) evaluated IPV prevalence among Veterans (n=25,497). Of the 12 Veteran studies, 10 were conducted among populations exclusively comprising VA users (i.e., clinical samples).

Most of the military studies were assembled from surveys conducted on bases and consisted of broad populations of soldiers and, in some instances, their spousal dependents. The majority of participants in the active duty studies were male and white, with a median age of 28. In contrast, the majority of Veteran studies were conducted among populations exclusively comprising VA users (i.e., clinical samples). Moreover, many Veteran studies were conducted in specialized populations; four<sup>7,61,65,69</sup> were conducted through mental health clinics, and one<sup>27</sup> focused on IPV among World War II prisoners of war. The majority of participants in the Veteran studies were women and white, with a median age of 46. Most of the 25 studies were rated fair quality; however, a quarter of the Veteran studies were rated poor quality compared with none of the active duty studies. While a variety of measurement tools were used to assess IPV, the most common tool was self-reported via the Conflict Tactics Scale (CTS). Details of the participants are shown in Table 4.

Table 3. Study characteristics of the IPV prevalence studies

Primary Article (Companion Article)	Geographic Location Setting Recruitment Total N	Population Age in Years (SD) % Female % White	Outcomes Timing of Outcome	Measurement Tool Type of Violence	Included in Meta-analysis? If No, Reason for Exclusion	Quality
Bohannon, 1995 <sup>18</sup>	Southeastern US General internal medicine Not reported N=188	Active duty 29.2 (NR) 50% 73.4%	Perpetration and victimization 12 months	CTS Physical	No Study assessed couples but did not report separate estimates for active duty participants	Fair
Campbell, 2003 <sup>13</sup> (O'Campo, 2006 <sup>55</sup> )	Washington, DC General internal medicine Jan 1998–Oct 2000 N=616	Active duty Categorical 100% 75.6%	Victimization Lifetime	AAS Psychological, emotional, physical, sexual, stalking	No No 12-month outcome data	Fair
Campbell, 2005 <sup>66</sup> (Campbell, 2008 <sup>71</sup> )	Midwestern US General internal medicine Not reported N=268	Veteran Majority >45 100% 0%	Victimization Lifetime	SES Sexual	No Reported sexual violence only	Fair
Caralis, 1997 <sup>68</sup>	Miami, FL General internal medicine Jun 1995–Aug1995 N=406	Veteran 50.4 (16) 100% 57%	Victimization 12 months, lifetime	AAS Psychological, emotional, physical, sexual	Yes	Fair
Coyle, 1996 <sup>64</sup>	Baltimore, MD General internal medicine Jul 1994–Dec 1994 N=429	Veteran 42.3 (NR) 100% 0%	Victimization Lifetime	STS Physical, sexual	Yes	Poor
Dichter, 2011 <sup>60</sup>	BRFSS General internal medicine 2006 N=21,162	Veteran Categorical 100% 67.8%	Victimization Lifetime	STS Physical, sexual	Yes	Poor
Dobie, 2004 <sup>63</sup>	Seattle, WA General internal medicine Oct 1996–Jan 1998 N=1206	Veteran 46.0 (15.0) 100% 73.0%	Victimization Lifetime	STS Physical	Yes	Fair
Dutra, 2012 <sup>70</sup>	USA General internal medicine 1984-1988 N=178	Veteran 24.8 (5.0) 50% 95.6%	Perpetration and Victimization 12 months	CTS Physical, psychological	No Too few studies to preform meta- analysis	Fair
Fonseca, 2006 <sup>12</sup> (Schmaling, 2011 <sup>52</sup> )	Fort Bliss, TX General internal medicine Mar 2003–Nov 2003 N=2926	Active duty 35.0 (8.86) 9.1% 64.3%	Perpetration 12 months	CTS Physical	Yes	Good

Primary Article (Companion Article)	Geographic Location Setting Recruitment Total N	Population Age in Years (SD) % Female % White	Outcomes Timing of Outcome	Measurement Tool Type of Violence	Included in Meta-analysis? If No, Reason for Exclusion	Quality
Forgey, 2006 <sup>56</sup> (Forgey, 2010 <sup>50</sup> )	Not reported General internal medicine Jul 2001–Sep 2001 N=248	Active duty 29.8 (7.0) 100% 37.1%	Perpetration and victimization 12 months	CTS Psychological, emotional, physical, sexual	Yes Gender subgroup meta-analysis only	Fair
Heyman, 1999 <sup>45</sup> (Newby, 2003; <sup>57</sup> McCarroll, 2000; <sup>15</sup> McCarroll, 2010 <sup>58</sup> )	Army, US General internal medicine 1990–1994 N=33,762	Active duty Categorical 8.2% 58.6%	Perpetration and victimization 12 months	CTS Physical	Yes	Good
Luterek, 2011 <sup>65</sup>	Seattle, WA Mental health Not reported N=208	Veteran 51.1 (NR) 50% 75%	Victimization Lifetime	TLEQ Physical	No Not broad population (PTSD and other mental health clinics)	Fair
Lutgendorf, 2009 <sup>41</sup>	Portsmouth, VA OB-GYN Jan 2007–Mar 2008 N=1104	Active duty Median=24 100% 56.1%	Victimization 12 months, lifetime	AAS Psychological, emotional, physical, sexual	No Not broad population (pregnant women)	Fair
Lutgendorf, 2012 <sup>39</sup>	Portsmouth, VA OB-GYN Oct 2008–Jun 2009 N=461	Active duty Median=24 100% 54.7%	Victimization 12 months, lifetime	AAS Psychological, emotional, physical, sexual	No Not broad population (pregnant women)	Fair
McCarroll, 2003 <sup>44</sup>	Not reported General internal medicine Jun 1999–Jun 1999 N=1025	Active duty 28.44 (NR) 0% 57.0%	Perpetration Lifetime	CTS Physical	No No 12-month outcome data	Good
Merrill, 1998 <sup>59</sup>	Orlando, FL General internal medicine NR N=2987	Active duty 20.3 (2.5) 52.2% 69.7%	Perpetration and victimization 12 months	CTS Physical, psychological	Yes	Fair
Merrill, 2005 <sup>42</sup> (Crouch, 2009; <sup>54</sup> Stander, 2011 <sup>53</sup> )	Greater Lakes, IL General internal medicine Jun 1996–June 1997 N=963	Active duty 19.81 (2.79) 56.3% 57.0%	Perpetration and victimization 12 months	CTS Physical	Yes	Fair
Newby, 2005 <sup>43</sup>	Not reported General internal medicine May 2000–Aug 2000 N=896	Active duty 31.0 (NR) 100% 70.0%	Perpetration 12–15 months, lifetime	CTS Physical	Yes Gender subgroup meta-analysis only	Fair

Primary Article (Companion Article)	Geographic Location Setting Recruitment Total N	Population Age in Years (SD) % Female % White	Outcomes Timing of Outcome	Measurement Tool Type of Violence	Included in Meta-analysis? If No, Reason for Exclusion	Quality
O'Donnell, 2006 <sup>27</sup>	California General internal medicine Not reported N=331	Veteran 80 (3.2) 0% NR	Perpetration 12 months	CTS Physical	No Not broad population (WWII prisoners of war)	Poor
Rosen, 2002 <sup>49</sup> (Rosen, 2002; <sup>47</sup> Rosen, 2002; <sup>46</sup> Rosen, 2003 <sup>51</sup> )	USARAK, Alaska General internal medicine Jun 1998–Sep 1998 N=648	Active duty Categorical 0% 58.2%	Perpetration 12 months	CTS Psychological, emotional, physical	Yes	Good
Sadler, 2003 <sup>67</sup>	DVA WHCCR General internal medicine Sep 1996–May 1997 N=506	Veteran 40 (9) 100% 73.9%	Victimization Not reported	STS Sexual	No Reported only sexual violence during service	Fair
Sayers, 2009 <sup>7</sup>	Philadelphia, PA Mental health April 2006–Aug 2007 N=199	Veteran 32.7 (9.1) 10.6% 53.3%	Perpetration 6 months	STS Psychological, emotional, physical	No Not broad population (returning OEF/OIF Veterans referred for behavioral health for evaluation)	Poor
Slep, 2010 <sup>40</sup> (Foran, 2011 <sup>48</sup> )	Air Force, International General internal medicine Apr 2006–Jun 2006 N=42,744	Active duty Age not reported 19.0% 74.1%	Perpetration and victimization 12 months	STS Psychological, emotional, physical, stalking	Yes	Good
Taft, 2009 <sup>69</sup>	Boston, MA Mental health Jan 2003–Jan 2008 N=236	Veteran NR (NR) 0% NR	Perpetration 12 months	CTS Physical, psychological	No Not broad population (combat- exposed Veterans seeking PTSD evaluation and/or treatment)	Fair
Teten, 2009 <sup>61</sup> (Sherman, 2006 <sup>62</sup> )	Houston, TX Mental health Sep 1997–Nov 2003 N=368	Veteran 47.5 (NR) 50% 87.5%	Perpetration 12 months	CTS Physical, sexual	No Not broad population (couples seeking family therapy for relationship issues)	Fair

<sup>a</sup> Determination of the outcome was from the perspective of the Veteran. For example, a study of IPV among civilian spouses of active duty servicemembers would be coded as a perpetration outcome. Abbreviations: AAS=Abuse Assessment Screen; BRFS=Behavioral Risk Factor Surveillance System; CTS=Conflict Tactics Scale; DVA WHCCR=Department of Veterans Affairs Women's Health Care Centers Registries; NR=not reported; OB-GYN=obstetrics and gynecology; OEF=Operation Enduring Freedom; OIF=Operation Iraqi Freedom; SD=standard deviation; STS=Sexual Trauma Scale; TLEQ=Traumatic Life Events Questionnaire; USARAK=United States Army in Alaska

**Table 4. Participant characteristics of the IPV prevalence studies**

Study Characteristic	Active Duty	Veteran
N studies (n participants)	13 (88,568)	12 (25,497)
Age: median (range)	28.44 (19.8–35) <sup>a</sup>	45.5 (24.8–80) <sup>b</sup>
Sex: n (%) <sup>c</sup>		
Female	16,590 (18.7%)	24,375 (95.6%)
Male	69,247 (78.2%)	1047 (4.1%)
Race: n (%)		
Black	15,975 (18.0%)	392 (1.5%)
Hispanic	5337 (6.0%)	80 (0.31%)
White	59,141 (66.8%)	16,597 (65.1%)
Other	5336 (6.0%)	6921 (27.1%)
Not reported	2779 (3.1%)	1364 (5.3%)
Setting: n studies (% of studies)		
General medical	11 (84.6%)	8 (66.7%)
Mental health	0	4 (33.3%)
Obstetrics-gynecology	2 (15.4%)	0
IPV measurement tool: n studies (% of studies)		
AAS	3 (23.1%)	1 (8.3%)
CTS	9 (69.2%)	4 (33.3%)
SES	0	1 (8.3%)
TLEQ	0	1 (8.3%)
Study-specific	1 (7.7%)	5 (41.7%)
Study quality: n (%)		
Good	5 (38.5%)	1 (8.3%)
Fair	8 (61.5%)	8 (66.7%)
Poor	0	3 (25%)

<sup>a</sup> N=grand mean of 10 means and medians that were reported or could be calculated; NR=1.

<sup>b</sup> N=grand mean of 12 means and medians that were reported or could be calculated; NR=2.

<sup>c</sup> Missing data=2731.

Abbreviations: AAS=Abuse Assessment Screen; CTS=Conflict Tactics Scale; IPV=intimate partner violence; SES=Sexual Experiences Survey; TLEQ=Traumatic Life Events Questionnaire

### *Prevalence of IPV Among Active Duty Servicemembers*

We identified 13 studies that assessed IPV prevalence among active duty populations.<sup>12,13,18,39-46,56,59</sup> Of these, 10 assessed IPV perpetration<sup>12,18,40,42-46,56,59</sup> and 10 assessed IPV victimization.<sup>13,18,39-42,45,46,56,59</sup> All but two studies<sup>13,44</sup> assessed prevalence in the last year. Two<sup>39,41</sup> were conducted among patients seeking prenatal care. One<sup>18</sup> assessed IPV among couples but did not report separate estimates for active duty participants. Because of the unique design characteristics of these studies, they were excluded from analyses for IPV prevalence among active duty servicemembers. Two studies were conducted among gender specific populations (e.g., male soldiers only);<sup>43,56</sup> these two studies were included in the gender subgroup meta-analysis only.

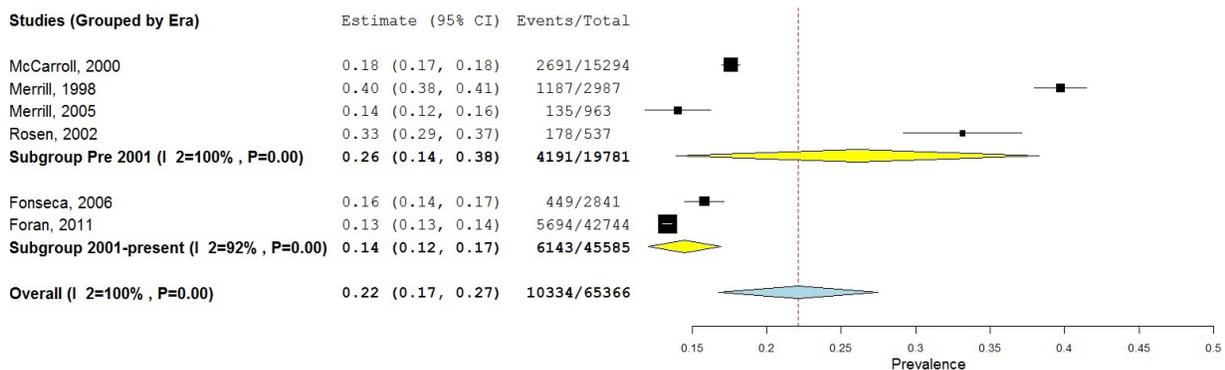
For the purpose of this review, IPV perpetration is defined as committing emotional, physical, or sexual abuse on an intimate partner (e.g., girlfriend, spouse). IPV victimization is defined as the experience of emotional, physical, or sexual abuse by an intimate partner. Below we report the results for perpetration and victimization separately and focus on the most common metric of IPV reported across included studies: 12-month *physical* abuse. When studies reported multiple estimates of IPV (e.g., any IPV vs. severe IPV only), we used the more inclusive prevalence estimate.

**IPV Perpetration**

We identified 6 studies that met criteria for a random-effects meta-analysis assessing perpetration of physical IPV among active duty servicemembers (n=65,366).<sup>12,15,42,47,48,59</sup> Figure 4 shows the forest plot of the 12-month weighted estimated mean prevalence rate of physical IPV perpetration. Pooled estimates across the 6 studies yielded a point estimate of 22 percent (95% CI, 17% to 27%); this estimate had significant heterogeneity ( $I^2=100%$ ).

Estimates varied by era of service. For servicemembers enrolled before 2001, the weighted estimated mean prevalence was 26 percent (n=19,781 from 4 studies; 95% CI, 14% to 38%), and for those enrolled from 2001 forward, the prevalence was 14% (n=45,585 from 2 studies; 95% CI, 12% to 17%). Both subgroups exhibited significant heterogeneity ( $I^2>90%$ ). We further queried heterogeneity by conducting an influence analysis. Influence analysis yielded a range of 18 percent to 23 percent for perpetration of IPV among active duty servicemembers.

**Figure 4. Prevalence of physical IPV perpetration among active duty servicemembers by era of service**

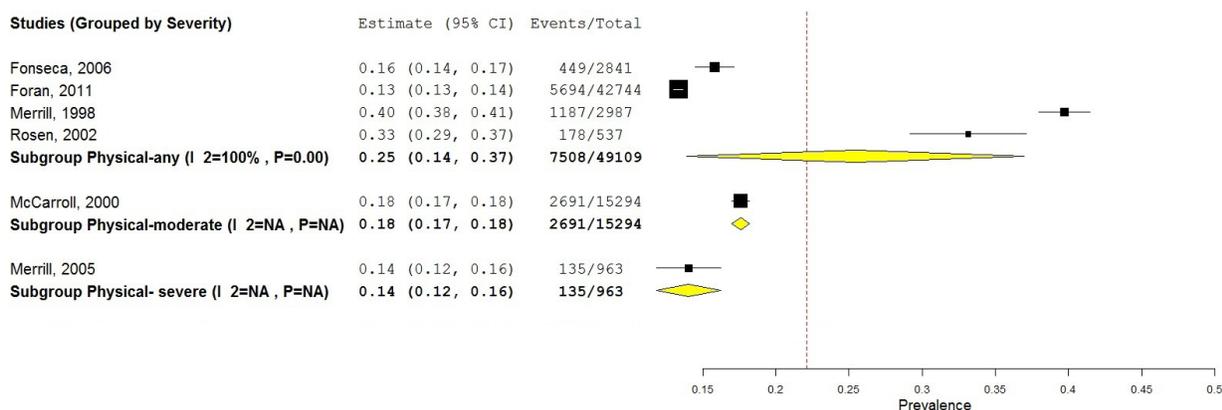


*Severity Effects*

We then grouped studies by severity of IPV because how physical IPV was defined (e.g., at least moderate vs. any physical IPV) likely was a source of heterogeneity in the overall estimate of prevalence. For severity, we categorized violence using the same classification presented in the original studies when possible. The category of *any* physical violence could include a variety of physical abuse ranging from restraining and grabbing to sexual assault. *Moderate* physical violence included acts like shoving, kicking, and hitting with a fist. *Severe* physical violence included such acts as being “beaten up,” choking, or threatening to use (or using) a knife or gun.

Prevalence estimates varied by IPV severity with the broadest definition of IPV (any physical violence) yielding the highest estimates (25%), and the more restrictive definition yielding much lower point estimates (14% to 18%) (Figure 5). For the one IPV subgroup with more than one study (any physical violence), heterogeneity remained high ( $I^2>90%$ ).

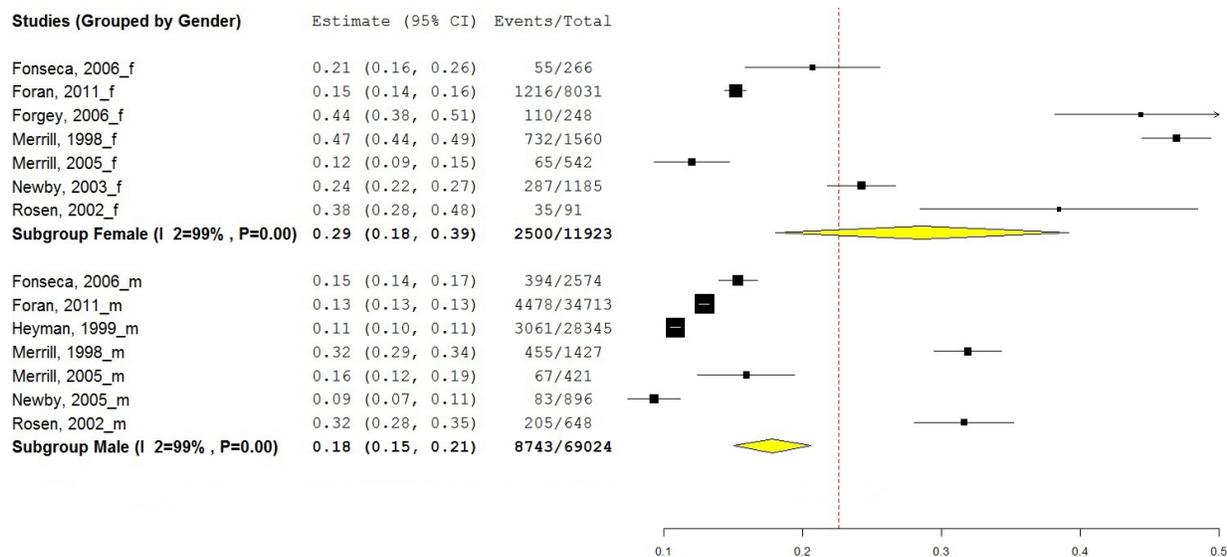
**Figure 5. Prevalence of physical IPV perpetration among active duty servicemembers by severity**



*Gender Effects*

To test the effect of gender on 12-month prevalence estimates for IPV perpetration, we conducted a subgroup analysis (Figure 6). Five studies provided separate prevalence estimates by gender of the perpetrator,<sup>12,42,43,46-48,59</sup> and two studies were conducted in gender-specific populations.<sup>45,56</sup> Among women (n=11,923 in 7 studies), the point prevalence of IPV perpetration was 29 percent (95% CI, 18% to 39%) with significant heterogeneity ( $I^2=99%$ ). For men (n=69,024 in 7 studies), the point prevalence of IPV perpetration was 18 percent (95% CI, 15% to 21%) with significant heterogeneity ( $I^2=99%$ ).

**Figure 6. Prevalence of physical IPV perpetration among active duty servicemembers by gender**



*Race Effects*

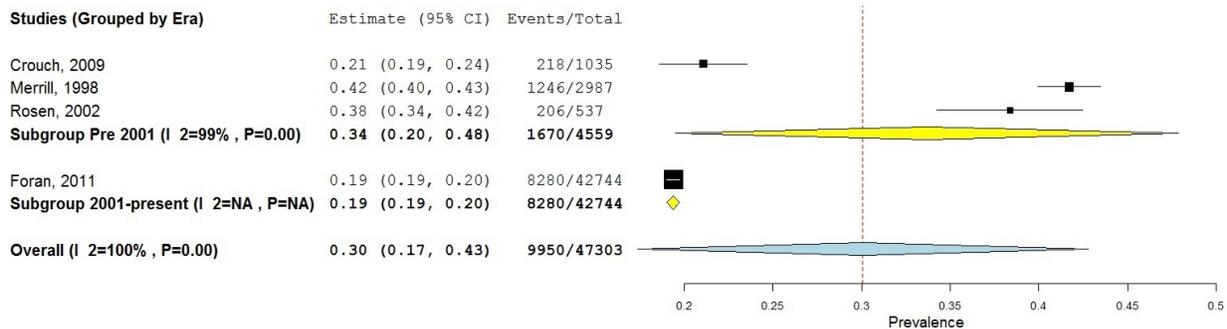
There were insufficient studies to conduct subgroup analysis by race. Only two studies<sup>12,48</sup> provided 12-month prevalence estimates for IPV perpetration by race or ethnicity in broad populations. Across these two studies, perpetration estimates did not appear to vary by race; prevalence ranged from seven percent (black populations) to nine percent (white populations).

**IPV Victimization**

We identified four studies that met criteria for a random-effects meta-analysis assessing physical IPV victimization among active duty servicemembers (n=47,303).<sup>47,48,54,59</sup> Figure 7 shows the forest plot of the 12-month weighted estimated mean prevalence rate of physical IPV victimization. Pooled estimates across studies yielded a point estimate of 30% percent (95% CI, 17% to 43%); this estimate had significant heterogeneity ( $I^2=100\%$ ).

To assess if prevalence rates varied by era of service, we conducted moderator analysis by date of recruitment. The weighted estimated mean prevalence rate of IPV victimization was 34 percent (n=4,559 from 3 studies; 95% CI, 20% to 48%) for servicemembers enrolled before 2001 and 19 percent (n=42,744 from 1 study; 95% CI, 19% to 20%) for those enrolled from 2001 to present. Both subgroups exhibited significant heterogeneity ( $I^2>90\%$ ). We further queried heterogeneity by conducting an influence analysis. Influence analysis yielded a range of 25 percent to 33 percent for IPV victimization of active duty servicemembers.

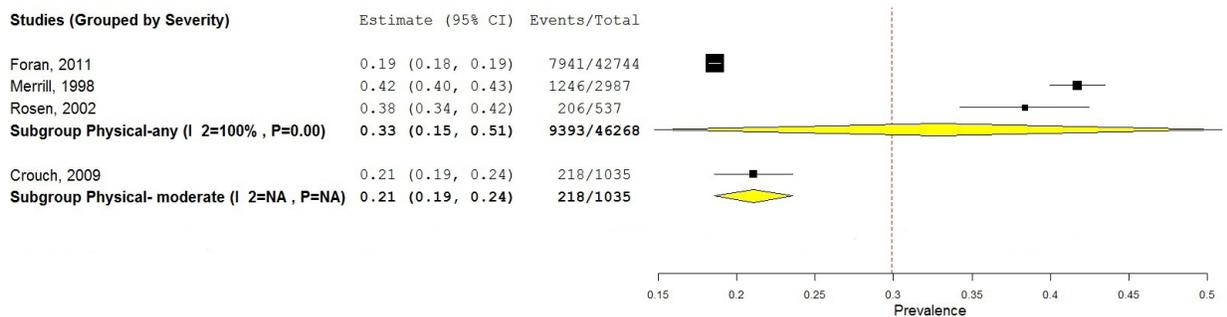
**Figure 7. Prevalence of physical IPV victimization among active duty servicemembers by era of service**



*Severity Effects*

We grouped studies by severity of IPV because how IPV was defined was a likely source of heterogeneity in prevalence estimates. Prevalence estimates of IPV victimization varied by IPV severity with the most inclusive definition of IPV (any physical violence) yielding the highest estimates (33%), and the more restrictive definition yielding much lower point estimates (Figure 8). For the one IPV subgroup with more than one study (any physical violence), heterogeneity remained high ( $I^2>90\%$ )

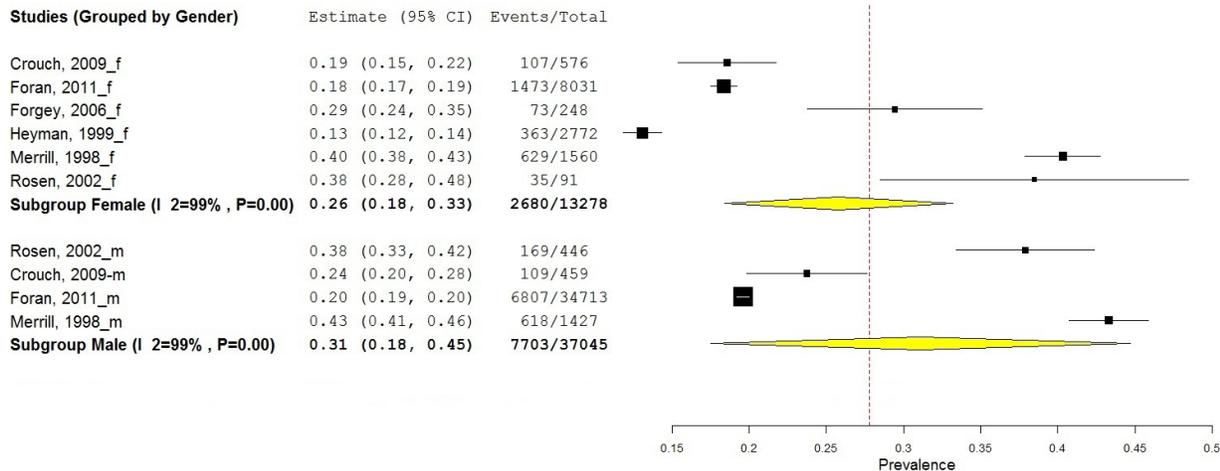
**Figure 8. Prevalence of physical IPV victimization among active duty servicemembers by severity**



*Gender Effects*

To test the effect of gender on prevalence of IPV victimization, we conducted a subgroup analysis. Five studies provided separate prevalence estimates by gender,<sup>45,47,48,54,59</sup> and one study was conducted in an all-female population<sup>56</sup> (Figure 9). Among women, the point prevalence of IPV victimization was 26 percent (n=13,278 in 6 studies; 95% CI, 18% to 33%) with significant heterogeneity ( $I^2=99%$ ). For men, the point prevalence of IPV victimization was 31 percent (n=37,045 in 4 studies; 95% CI, 18% to 45%) and had significant heterogeneity ( $I^2=99%$ ).

**Figure 9. Prevalence of physical IPV victimization among active duty servicemembers by gender**



*Race Effects*

There were insufficient studies to conduct subgroup analysis by race. Only one study<sup>48</sup> provided 12-month prevalence estimates for IPV perpetration by race or ethnicity in broad populations. In this study, IPV victimization estimates did not appear to vary by race; prevalence ranged from 10 percent (black and white populations) to 11 percent (Hispanic populations).

**Summary of Prevalence of IPV Among Active Duty Servicemembers**

Among active duty servicemembers, the prevalence of 12-month perpetration of physical abuse was 22 percent, and the prevalence of 12-month victimization of physical abuse was 30 percent (Table 5). Both estimates had high heterogeneity. Moderator analysis by era of service and gender all showed subgroup differences, but each pooled subgroup estimate also had high heterogeneity. There were insufficient studies to query subgroup differences by race and ethnicity. High heterogeneity can be partially explained by the inclusion of few studies in the pooled analysis (as described in “Expanded Guidance on Selected Quantitative Synthesis Topics” of the “Methods Guide”<sup>37</sup>). However, variability in prevalence is likely due to a combination of factors, including the small number of pooled studies.

**Table 5. Prevalence of IPV among active duty servicemembers**

Overall		Era of Service		Gender	
		Pre-2001	Post-2001	Female	Male
<b>Perpetration</b>	22%	26%	14%	29%	18%
<b>Victimization</b>	30%	34%	19%	26%	31%

### *Prevalence of IPV Among Veterans*

We identified 12 studies that assessed IPV prevalence among Veteran populations.<sup>7,27,60,61,63-70</sup> Of these, five assessed perpetration<sup>7,27,61,69,70</sup> and eight assessed victimization.<sup>60,63-68,70</sup> Below we report the results for perpetration and victimization separately.

#### **IPV Perpetration**

Of the five studies,<sup>7,27,61,69,70</sup> prevalence of IPV perpetration among Veterans ranged from 15 to 60 percent. However, populations and outcomes were too heterogeneous to conduct a meta-analysis; thus we synthesized results qualitatively.

One fair-quality study<sup>61</sup> focused on IPV between 184 heterosexual couples seeking therapy for relationship issues at an outpatient VA family therapy clinic. In all couples, the Veterans were male; 88 percent of the sample was white. Veterans had a primary diagnosis of PTSD (32%), depression (42%), or adjustment disorder (26%). The Veteran and partner separately completed the Conflict Tactic Scale (CTS) to assess perpetration of verbal or physical aggression towards an intimate partner in the past year. Overall prevalence of IPV perpetration by male Veterans was 30%. Additionally, couples data were used to create three violence profiles based on Veteran and female partners' self-reporting of IPV: (1) nonviolent couples (44%), (2) mutually violent couples (26%), and (3) one-sided violent couples (30%). Male Veterans with PTSD were significantly more likely to be in mutually violent couples than male Veterans in one-sided violence or nonviolent couples ( $p=0.007$ ).

A fair-quality study<sup>70</sup> assessed IPV perpetration among 89 female Vietnam Veterans and their male partners who completed the family interview component of the National Vietnam Veterans Readjustment Study.<sup>72</sup> Most of the women Veterans were white (96%), and only 6 percent met diagnostic criteria of PTSD. The 8-item physical assault subscale was used to assess IPV prevalence. The CTS was administered to the male partners only; thus, this study only reports on female-perpetrated IPV as reported by male partners. According to reports from male partners, 22 percent of the female Veterans perpetrated physical IPV against their partners in the last year.

In another fair-quality study,<sup>69</sup> 236 combat-exposed male Veterans screened at a PTSD clinic for possible evaluation and treatment were queried for IPV perpetration using the 12-item physical assault subscale of the revised CTS (CTS2). Most of the men were white (76%) and served in the Vietnam War era (63%). Of the 161 partnered Veterans, 33 percent reported engaging in physical aggression toward their partner in the previous year.

A poor-quality study<sup>7</sup> assessed IPV perpetration among 199 recently returning Afghanistan and Iraq Veterans referred for behavioral health evaluations. Most of the sample was male (89%), and most were white (53%). Based on nonmutually exclusive diagnosis codes, 72 percent had depression, 47 percent had PTSD, 35 percent had risky alcohol use, 46 percent had generalized anxiety disorder, and 12 percent had mania. This study assessed IPV using a study-developed tool to assess family readjustment and domestic abuse in the prior 6 months with the partnered, separated, or divorced Veterans ( $n=134$ ). The measurement of domestic abuse included both low-intensity behaviors (e.g., psychological intimidation) and more severe physical violence. Overall, 60 percent of partnered, separated, or divorced Afghanistan and Iraq Veterans reported some

domestic abuse in the last 6 months; however, this estimate included both physical IPV (e.g., shoving, pushing) and psychological aggression (e.g., shouting).

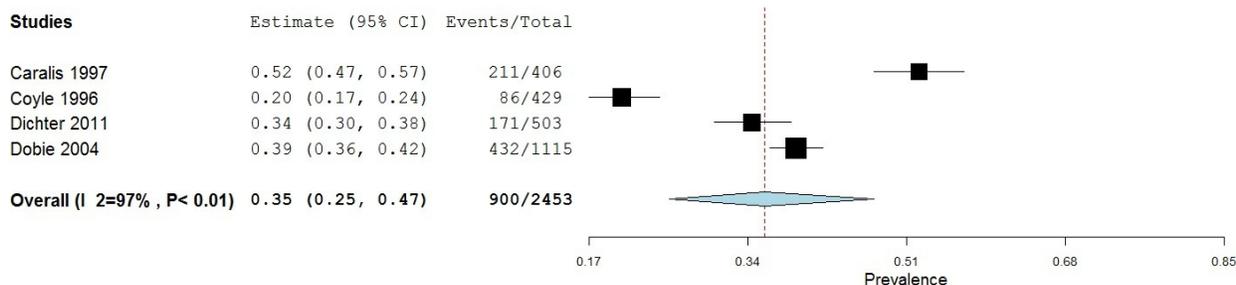
Another poor-quality study<sup>27</sup> reported on verbal and physical IPV among World War II prisoners of war (n=331). The mean age of the sample was 80 years, and over half (57%) reported some depressive symptoms. The CTS was used to assess verbal and physical aggression. Overall, 15 percent reported physical IPV perpetration in the last year.

**IPV Victimization**

We identified eight studies that assessed victimization among Veterans.<sup>60,63-68,70</sup> Of these, three<sup>65-67</sup> were too heterogeneous to be combined in a summary estimate of IPV victimization due to differences in populations or outcomes. One study<sup>65</sup> recruited from general mental health and specialty PTSD clinics. One reported on marital sexual violence,<sup>66</sup> and another<sup>67</sup> reported on rape committed by an intimate partner during service. These three studies were excluded from summary estimates. One study<sup>70</sup> estimated prevalence of IPV in the last 12 months and could not be combined with the most common metric of IPV reported in other studies (i.e., lifetime IPV victimization). Results of this study are summarized qualitatively.

Four studies, comprising women-only samples, met criteria for a random-effects meta-analysis (n=2453) of exposure to lifetime IPV victimization.<sup>60,63,64,68</sup> Figure 10 shows the forest plot of the *lifetime* weighted estimated mean prevalence of physical IPV victimization among Veterans. Pooled estimates across studies yielded a point estimate of 35 percent (95% CI, 25% to 47%) and had significant heterogeneity ( $I^2=97%$ ). No studies reported separate estimates by race or era of service.

**Figure 10. Prevalence of lifetime physical IPV victimization among women Veterans**



Two studies<sup>68,70</sup> also reported on the prevalence of IPV victimization in the last year. Both studies were conducted among all-female populations. In one fair-quality study,<sup>68</sup> 406 women Veterans seeking primary care at a VA medical center were assessed for domestic violence using the Abuse Assessment Screen. Most of these women were white (57%), and only 19 percent had obtained any education beyond high school. Of these women Veterans, 7 percent reported being abused by a partner in the last year. In another fair-quality study described above,<sup>70</sup> male partners of 89 female Vietnam Veterans were administered the CTS. According to self-reports from male partners, 12 percent of the female Veterans experienced physical IPV by their partners in the last year.

### **Summary of Prevalence of IPV Among Veterans**

The prevalence of IPV perpetration within the last year ranged considerably (15% to 60%) across the five studies. However, most samples consisted of specialized clinical populations with a high mental health burden, and IPV perpetration was defined inconsistently across studies, ranging from physical abuse as measured on the CTS to any form of domestic abuse. Of the eight victimization studies, two reported on sexual violence only and none provided estimates for male Veterans. Four studies provided data amenable to meta-analysis. The pooled lifetime weighted estimated prevalence rate of physical IPV victimization among female Veterans yielded a point estimate of 35 percent (95% CI, 25% to 47%). The overall prevalence estimate had high heterogeneity, but limited data precluded moderation analysis to query for subgroup differences. Two studies reported on the prevalence of IPV victimization in the last year among women Veterans. Prevalence estimates in these two studies ranged from 7 percent to 12 percent.

### **KEY QUESTION 2. For persons who are at risk for, experience, or commit intimate partner violence, what interventions are associated with decreased exposure to intimate partner violence and its associated physical harms, mental harms, or mortality?**

#### **Key Points**

- We did not identify any SRs that evaluated primary prevention strategies for IPV.
- Most secondary interventions focused on reducing victimization. Only one SR focused on perpetration and synthesized the evidence for the use of cognitive behavioral therapy (CBT) with male perpetrators of IPV; this study identified one weakly favorable study and otherwise had inconclusive results.
- Standardized IPV screening interventions in health care settings increased the identification of victims of IPV when compared with nonstandard or nonuniversal screening. Screening interventions may decrease recurrence of IPV, though the effect is not sustained over time.
- Multicomponent screening interventions that included institutional support, effective screening protocols, initial and ongoing training of providers, and immediate access to referral services increased rates of IPV screening, disclosure, and identification. Using multicomponent screening interventions also has the potential to increase provider self-efficacy to perform IPV screening.
- Other interventions (counseling and advocacy) showed decreases in IPV victimization; however, the evidence is weak and often inconsistent.
- Secondary intervention research is largely inconclusive and faces many limitations, for several reasons, including high heterogeneity of samples, attrition, short followup periods, weak intervention effects, and small sample sizes.

## **Description of Included Studies**

We identified four good-quality<sup>2,73-75</sup> and two fair-quality<sup>76,77</sup> SRs that evaluated interventions aimed at decreasing exposure to IPV and its associated harms. No primary prevention interventions were identified. All six SRs evaluated studies that were secondary or tertiary interventions focused on populations with prior exposure to IPV. Four SRs compared screening interventions with usual care. Two SRs compared behavioral interventions for female victims with usual care or control groups; one SR examined CBT for male perpetrators of IPV against their female partners. One SR assessed brief, intensive advocacy interventions for female victims versus usual care or control condition. Characteristics of the six SRs are summarized in Table 6. Detailed quality assessments are presented in Appendix C.

All literature strategies included MEDLINE (via PubMed) and PsycINFO, and all but one SR included some aspect of the Cochrane Library. Additional sources of information were peer-reviewed literature databases (6), meeting abstracts and conference papers (2), clinical trial registries (2), unpublished theses and dissertations (2), grey literature reports (1) and manual searches of primary articles and reviews (2). Language limits were placed in four of the six SRs.

Two of the six SRs<sup>2,75</sup> limited their primary studies to RCTs only; one SR<sup>74</sup> included RCTs as well as studies with quasi-random allocation; and three studies<sup>73,76,77</sup> assessed both experimental and observational studies. Five SRs used the qualitative approaches of narrative review<sup>2,73,75,77</sup> and realist review.<sup>74</sup> Two SRs<sup>74,75</sup> used meta-analysis techniques with applicable data. All SRs except one<sup>77</sup> completed quality assessments of included primary studies. Overall primary study quality was fair, with the most common quality problems unclear allocation concealment in RCTs and potential selection bias with quasi-experimental and observational studies.

All six SRs reported no conflicts of interest. Five SRs reported on funding sources. Of these, two were funded entirely by government agencies, one each in the United States and Canada. One was partially funded by a government agency in Norway with additional private funding. One study received private funding, and one study was unfunded.

Information on the populations studied was somewhat limited in all six SRs (Table 6). The number of primary articles included ranged from 6 to 35. Sample sizes varied widely and demographic data were reported sparsely across the included SRs. No study reported whether active duty servicemembers (or their dependents) or Veterans were included in the sample. However, our review of the primary studies found that one study of CBT for perpetrators of IPV in the SR by Smedslund et al.,<sup>75</sup> was conducted with Veterans at a Veterans Affairs Medical Center.

Table 6. Study characteristics of the IPV systematic reviews

Study	Ramsay, 2009 <sup>74</sup>	O'Reilly, 2010 <sup>77</sup>	O'Campo, 2011 <sup>76</sup>	Smedslund, 2011 <sup>75</sup>	Choo, 2012 <sup>73</sup>	Nelson, 2012 <sup>2</sup>
<b>Quality</b>	Good	Fair	Fair	Good	Good	Good
<b>Population</b>	Women ≥15 years of age who have experienced IPV	Pregnant women	Patients presenting to a health care setting	Men who are physically violent toward their female wife, partner, or ex-partner	Patients presenting to emergency departments	Women in health care settings without problems directly related to abuse, such as physical injuries
<b>Intervention and Comparator</b>	<b>Intervention:</b> Brief (>12h) or intensive (≤12h) advocacy interventions including safety planning or facilitation of access to refuges or shelters, emergency housing, or psychological care <b>Comparator:</b> Usual care or minimal additions such as IPV resource card or pamphlet	<b>Intervention:</b> (1) IPV screening for pregnant women (2) Counseling interventions for pregnant women who had experienced domestic violence <b>Comparator:</b> Heterogeneous group of comparison conditions (historical controls, usual care, screening with a different tool)	<b>Intervention:</b> IPV screening <b>Comparator:</b> Studies with no control, pre/post intervention control, and a defined control group	<b>Intervention:</b> Cognitive behavioral therapy, or recognizable elements thereof, delivered individually, couple/conjoint, or as group-based therapy <b>Comparator:</b> Studies were included with no treatment control and with other types of treatment as control	<b>Intervention:</b> Computer-based technologies for behavioral screening, interventions, or referrals <b>Comparator:</b> Heterogeneous group of comparison conditions (usual care, non-computer based IPV screen, computerized screen without IPV screening questions)	<b>Intervention:</b> (1) IPV screening (2) Heterogeneous counseling interventions for women positively detected by IPV screening <b>Comparator:</b> (1) Control group (2) Usual care
<b>Setting</b>	Various settings including health care or criminal justice facilities, domestic violence agencies, shelters or refuges, and community locations in the US (n=9) and Hong Kong (n=1)	Prenatal health clinics and hospitals in the US (n=7), Hong Kong (n=1), and Japan (n=1)	Health care settings in the US (n=10), Canada (n=2), United Kingdom (n=1), Australia (n=2), and New Zealand (n=2)	Various settings including prisons, individuals' homes, and community settings in the US (n=6)	Emergency departments in the US (n=4) and Canada (n=1)	<u>Screening study</u> Health care settings in the US (n=11), Canada (n=2), Brazil (n=1) and the United Kingdom (n=1) <u>Intervention study</u> Health care settings and home visits in the US (n=7) and Australia (n=1) <u>Harms study</u> Various settings including health care and community settings in the US (n=4), Canada (n=1), the United Kingdom (n=1), Australia (n=1), and not reported (n=7) <sup>a</sup>

Study	Ramsay, 2009 <sup>74</sup>	O'Reilly, 2010 <sup>77</sup>	O'Campo, 2011 <sup>76</sup>	Smedslund, 2011 <sup>75</sup>	Choo, 2012 <sup>73</sup>	Nelson, 2012 <sup>2</sup>
<b>Databases Searched</b>	ASSIA British Nursing Index (CRCT and DARE) CINAHL EMBASE (Elsevier) Health Management Information Consortium IBBS MEDLINE metaRegister of Controlled Trials Midwives Information and Resource Index National Research Register PsycINFO SSCI	Cochrane Library EMBASE (Elsevier) MEDLINE PsycINFO	ASSIA EBM Reviews MEDLINE PsycINFO Social Sciences Abstracts SSCI Social Services Abstracts Sociological abstracts Violence and Abuse Abstracts Manual searches	Bibliography of Nordic Criminology CINAHL Cochrane Library (CRCT) Criminal Justice Abstracts EMBASE (Elsevier) ERIC Medline PsycINFO SIGLE Social Care Online Sociological Abstracts	Academic Search Premier CINAHL Cochrane Library (CRCT, DARE CDSR) EMBASE (Elsevier) Grey Literature Report Health Technology Assessments Database Nursing at OVID ProQuest PsycINFO PubMed SocINDEX	Cochrane Library (CRCT, CDSR) MEDLINE PsycINFO Scopus
<b>Search Date</b>	Only 2008 reported	November 2009	No search date reported; SR included articles up to July 2010	January 2010	February 2011	January 2012
<b>Language Limits</b>	None	English	English	None	English, Spanish, or French	English

Study	Ramsay, 2009 <sup>74</sup>	O'Reilly, 2010 <sup>77</sup>	O'Campo, 2011 <sup>76</sup>	Smedslund, 2011 <sup>75</sup>	Choo, 2012 <sup>73</sup>	Nelson, 2012 <sup>2</sup>
<b>Study Designs (n)</b>	Patient-level or cluster RCT (n=5) Quasi-randomized controlled trial (n=5)	Comparative studies using any methodology Patient-level or cluster RCT (n=4) Historical control study (n=3) Case-control study (n=2)	RCT (n=0), case-control (n=0), case series (n=0), cohort (n=0), interrupted time series (n=0) Qualitative plus retrospective pre/post chart audit (n=2) Pre/post chart audit (n=1) Retrospective pre/post chart audit (n=1) Pre/post (n=2) Cross-sectional chart audit (n=2) Multicomponent evaluation (n=2) Multicomponent evaluation with pre/post (n=1) Multicomponent evaluation with nonrandomized controlled trial (n=3) Nonrandomized controlled trial (n=1)	RCT (n=6)	All observational and experimental studies Cross-sectional (n=1) Prospective cohort (n=1) Quasi-experimental (n=2) RCT (n=2)	RCT (n=35)
<b>Range of Sample Sizes</b>	36 to 329	246 to 1440	16 to 46,929	64 to 861	87 to 7681	20 to 6743
<b>Analytic Approach</b>	Meta-analysis Qualitative summary	Meta-analysis Qualitative summary	Qualitative summary	Meta-analysis Qualitative summary	Qualitative summary	Qualitative summary
<b>Primary Outcomes of Interest</b>	Treatment/services received for IPV Rates of IPV victimization	IPV identification Rates of IPV Victimization Referral for treatment/ services related to IPV	IPV identification Rates of IPV victimization	Change in IPV perpetration rates	IPV identification	Rates of IPV victimization
<b>Secondary Outcomes of Interest</b>	IPV-associated physical and mental harms	IPV-associated physical and mental harms	None	None	None	None
<b>Source of Funding</b>	Socialforsknings Institut Nordic Campbell Centre, Denmark (private)	None	Ontario Ministry of Health and Long-Term Care (government)	Norwegian Knowledge Centre for the Health Services, Norway (government) Nordic Campbell Centre, Denmark (private)	Not reported	AHRQ

<sup>a</sup> Two U.S.-based studies were used for both screening and harms studies.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; ASSIA=Applied Social Sciences Index and Abstracts; CINAHL=Cumulative Index to Nursing and Allied Health Literature; CRCT=Central Registry of Controlled Trials (Cochrane); DARE=Database of Abstracts of Reviews of Effects; EBM=Evidence-Based Medicine; ERIC=Education Resources Information Center; IBBS=International Bibliography of the Social Sciences; IPV=intimate partner violence; SIGLE=System for Information on Grey Literature in Europe; SSCI=Social Sciences Citation Index.

## *Qualitative Synthesis of IPV Intervention Strategies*

We categorized the six SRs according to intervention strategy (e.g., screening, counseling). For each comparison, we focus our discussion on the SR having the highest quality and the most recent search date. We organize findings by outcomes of interest. The other SRs are described briefly when their findings differed importantly or they reported other relevant outcome analyses.

### **Screening Interventions**

We identified four SRs that explored IPV screening interventions.<sup>2,73,76,77</sup> Of these, the most recent and highest quality was the study by Nelson et al., 2012,<sup>2</sup> with a search date of January 2012. This SR was commissioned by AHRQ to update the U.S. Preventive Services Task Force (USPSTF) recommendations for screening women for IPV. Overall, USPSTF recommends IPV screening for asymptomatic women of childbearing age and, further, that women who screen positive should be offered a referral for services.<sup>78</sup> Below we focus on the findings of the SR by Nelson et al.<sup>2</sup> that are relevant to outcomes of interest for this report.

#### *Identification of IPV*

Nelson et al.<sup>2</sup> identified 12 fair- and 3 good-quality studies (15 total) that evaluated the diagnostic accuracy of 13 screening instruments in populations of asymptomatic women in a health care setting. Six instruments (i.e., HARK, HITS [English and Spanish versions] modified CTQ-SF, OVAT, StaT, and WAST) had sensitivity and specificity of greater than 80 percent for detecting women exposed to interpersonal violence (median number of items, 5; range, 4 to 28).<sup>2</sup> This SR also reported adverse effects (e.g., feeling judged by provider, feeling uncomfortable being asked about IPV) that were identified in 3 RCTs, 11 descriptive studies, and 2 SRs. Findings indicated minimal adverse effects and low levels of harm (e.g., verbal abuse) related to IPV screening in women receiving health care services.

#### *Treatment or Services Received for IPV*

Nelson et al. identified 1 fair-quality cluster RCT with 6743 asymptomatic women who were randomly assigned to IPV screening or to usual care (i.e., no screening). Women were recruited at outpatient medical clinics in Canada and interviewed at baseline and 6, 12, and 18 months. Though 12-month prevalence of IPV differed a little at baseline between screened and nonscreened groups (13% vs. 12%), women who received screening were more likely to discuss IPV with their clinicians (44% vs. 8%). During the 18-month followup, screened and nonscreened women both had statistically similar increases in access to additional health care services.<sup>2</sup>

#### *Changes in IPV-related Physical or Mental Harms*

In the same fair-quality cluster RCT with 6743 asymptomatic women, screening versus usual care reduced IPV and improved health outcomes for both groups, but there was no statistically significant difference between groups. Women were recruited at outpatient medical clinics in Canada and interviewed at baseline and 6, 12, and 18 months. During the 18-month followup, screened and nonscreened women both had statistically similar decreases in IPV recurrence, PTSD symptoms, and alcohol problems. Further, both groups had improved scores for quality of life, depression, and mental health. These findings are limited because of the high loss to

followup (43% screened, 41% unscreened) and significant differences between the individuals lost to followup and those included in all followups.

### *Other Findings Addressing Screening Interventions*

The other three SRs<sup>73,76,77</sup> were generally in agreement with the results of Nelson et al.<sup>2</sup> Where differences occurred, they were largely due to different timing for outcomes, populations, and settings or differences in approach to data analysis. We summarize below the notable findings from the other three SRs:

- A good-quality SR with a February 2011 search date<sup>73</sup> identified one good- and four moderate-quality studies of computerized IPV screening in emergency departments (sample size range, 87 to 7681), which reported on the use of computers to screen for IPV in emergency departments. This SR found high feasibility and acceptability of computerized screening in emergency departments, with few adverse effects reported and few negative consequences.
- One fair-quality realist review SR with a July 2010 search date<sup>76</sup> identified 23 studies of 17 programs (sample size range, 16 to 46,929) that implemented IPV screening. Six of the 17 were deemed “comprehensive” interventions with multiple components of institutional support, use of effective screening protocols, thorough initial and ongoing training of providers, and immediate access to referral services. Multicomponent interventions successfully increased rates of IPV screening, disclosure, and identification and sustained these rates over time; the noncomprehensive sites (11 of 17) found no significant differences compared with control.
- Another fair-quality SR with a November 2009 search date<sup>77</sup> identified five studies (sample size range, 246 to 1440) of screening women for domestic violence during pregnancy. Three of these studies used historical controls, one was a case control, and one was an RCT. Four studies were completed in the United States and one in Japan. Their qualitative analysis of the five screening studies found that the identification of domestic violence was significantly higher in standardized screening groups compared with a nonstandardized screening or no screening. There was also evidence that repeated screening during pregnancy increased identification rates.

### *Behavioral Interventions*

We identified one good-quality SR<sup>75</sup> that focused on male perpetrators of IPV and two SRs<sup>2,77</sup> (one good quality, one fair) that synthesized evidence on behavioral interventions for female victims of IPV. Within the SRs, the group of behavioral strategies was heterogeneous (e.g., CBT, home visitations, general counseling). We summarize below the findings of the two good-quality SRs<sup>2,75</sup> as they relate to the key outcomes of this report. We summarize the findings of the fair-quality SR<sup>77</sup> when they add new information or contrast with those from the other two SRs.

### *Changes in IPV Perpetration*

Smedslund et al.<sup>75</sup> (January 2010 search date) examined six RCTs of CBT interventions for male perpetrators of physically violent behavior toward a female partner, wife, or ex-partner (sample size range, 64 to 861). Overall, the included studies were of low quality in this SR<sup>75</sup>

commissioned by the Cochrane Collaboration to assess whether CBT reduces violence in men who are physically violent toward their female partners. Four studies evaluated CBT versus a no-treatment control group, and two studies evaluated CBT versus other forms of treatment. Only one study (n=420) showed a statistically significant effect of CBT compared with no treatment on physical violence. A meta-analysis involving 1771 men showed a decrease in violence, but the estimate was not significant (relative risk 0.86; 95% CI, 0.54 to 1.38) and had high heterogeneity ( $I^2=79\%$ ). For the two studies where CBT was compared with another form of treatment, the results were inconclusive. This SR rated the strength of evidence as insufficient for CBT as a treatment for IPV perpetrators.

#### *Changes in IPV Victimization and IPV-related Physical or Mental Harms*

The good-quality SR by Nelson et al.<sup>2</sup> (January 2012 search date) assessed 6 RCTs (1 good quality, 4 fair, and 1 poor) of behavioral interventions for women who had screened positive for IPV in a health care setting. Overall 4169 women participated in these interventions (range, 174 to 1044). Three RCTs assessed interventions for pregnant and postpartum women, and three targeted women regardless of pregnancy status, all in health care settings. The intervention methods were heterogeneous and included paraprofessional postpartum home visitation versus usual care, nurse case management versus usual care, counseling intervention during or after pregnancy versus usual care, counseling intervention at a family planning clinic versus usual care, wallet-sized referral card versus 20-minute nurse management protocol, and trained mentor home visitation versus usual care.

An RCT of counseling versus usual care during pregnancy reported decreases in IPV events during pregnancy and postpartum period (adjusted odds ratio, 0.48; 95% CI, 0.29 to 0.80) and better birth outcomes (i.e., birth weight <1500 g, gestational age) in the counseling group. One of two RCTs of home visitation versus usual care for young mothers resulted in improved IPV outcomes with visitation. Another study of home visitation versus usual care showed a decrease in IPV victimization, but depression, physical well-being, mental well-being, and parental stress were not statistically significantly better in the home visitation group. Two RCTs showed improved outcomes in intervention and control groups with no statistically significant differences between groups (counseling vs. referral cards; nurse management vs. usual care in pregnancy). Another RCT of counseling versus usual care found decreased pregnancy coercion at followup (adjusted odds ratio 0.29; 95% CI, 0.09 to 0.91) and discontinuation of unsafe relationship when compared with usual care. Overall, these studies show a positive signal for a heterogeneous group of behavioral interventions; however, Nelson et al.<sup>2</sup> found limited statistically significant evidence to support interventions. Findings should be interpreted with caution due to small sample sizes and high attrition across included studies.

#### *Other Findings Addressing Behavioral Interventions*

We identified one fair-quality SR<sup>77</sup> that included four intervention studies (one case-control and three RCTs) with a total of 859 participants. Behavioral interventions included (1) prenatal and postnatal counseling using trained counselors, nurses, and midwives and (2) an enhanced intervention of counseling plus a trained peer mentor. Both interventions were compared with usual care or with receipt of a wallet-sized community resource card. The results for effectiveness of counseling were mixed, with significant within-group decreases in physical harm

from baseline to followup in two of the four studies but no significant between-group differences within each study. The counseling intervention compared with the enhanced counseling plus mentoring intervention showed a significant decrease in threat of physical harm reported by the enhanced group compared with the counseling-only group at 2 months. The SR by O'Reilly et al.<sup>77</sup> supports the findings of the good-quality SRs and also concludes that there is limited evidence for the effectiveness of identified interventions with the present quantity and quality of intervention studies available.

### **Advocacy Interventions**

We identified one good-quality SR<sup>74</sup> with a search date of July 2008 that evaluated 10 advocacy intervention studies having a total of 1527 participants. This SR, funded by Socialforsknings Institut at the Nordic Campbell Centre in Denmark, had the objective of assessing effects of advocacy interventions conducted in diverse settings on women who have experienced abuse by an intimate partner. For the purpose of this SR, advocacy interventions were defined as interventions with the following core activities: education and support to enhance provision of legal, housing, and financial advice; facilitating access and use of community shelters and emergency housing and psychological interventions; and guidance on safety planning. This SR included a diverse group of interventions, categorized into brief (<12 hours duration) or intensive (≥12 hours duration), with heterogeneous outcome measures and durations of followup (ranging from immediate postintervention to 3 years). Settings included domestic violence shelters; emergency departments; in-home visits (recruited from shelter); general community settings (recruited from shelter); antenatal clinics; the family violence unit of a district attorney's office; general public health clinics; and Women, Infants, and Children clinics.

#### *Treatment or Services Received for IPV*

The use of services related to IPV exposure (e.g., use of counseling, protection orders, use of shelters) was measured only in two primary studies, both of which assessed brief advocacy interventions compared with controls. Neither study show statistically significant differences in use of services between the advocacy intervention and control participants. However, one study showed a positive trend in use of services related to advocacy interventions both in short-term and longer term followup assessments (12 months followup standard mean difference [SMD] 0.22; 95% CI, 0.00 to 0.44; and at 12-24 months followup SMD 0.15; 95% CI, -0.07 to 0.37).<sup>74</sup>

#### *Changes in IPV Victimization and IPV-related Physical or Mental Harms*

Six interventions identified physical abuse outcomes; of these, three evaluated brief advocacy interventions and three evaluated intensive interventions compared with usual care. Five of the six studies found no significant differences in rates of physical abuse between intervention and control groups. Three pooled studies of intensive advocacy intervention (n=295) found a significant reduction in physical abuse at 24 months but not at shorter or longer time periods (odds ratio 0.43; 95% CI, 0.23 to 0.80). The one good-quality intervention study (n=106) observed a reduction in minor physical abuse among pregnant women in the intervention group but no change in severe abuse. No significant effects were found at 12 months followup for level of sexual abuse (n=106) (change-score SMD -0.11; 95% CI, -0.49 to 0.26) or overall abuse (2 studies, total n=131).<sup>74</sup> Across two pooled studies (n=232), brief interventions increased use of

safety behaviors (e.g., use of coded telephone messages to a friend, keeping clothes at a friend's house, hiding emergency money) at 12 months (weighted mean difference [WMD] 0.60; 95% CI, 0.14 to 1.06) and at 12 to 24 months followup (WMD 0.48; 95% CI, 0.04 to 0.92).

No significant effects were found for depression (3 studies, n=308) (WMD -0.05; 95% CI, -0.19 to 0.09), anxiety/psychological distress (4 studies, n=231) (SMD -0.16; 95% CI, -0.39 to 0.06), or PTSD (n=53) (SMD -0.45, 95% CI -1.00 to 0.11). Overall, advocacy interventions show promise in reducing IPV victimization, but the effects on other physical and mental harms were inconclusive.<sup>74</sup> Authors of this SR rated the strength of evidence for advocacy interventions as insufficient.

### **Summary of IPV Intervention Strategies**

- Screening interventions improve identification of IPV victimization in women.
- Screening interventions may improve other physical and mental harms when paired with behavioral interventions for women who screen positive for IPV, but there is insufficient evidence to support this conclusion.
- Other secondary prevention interventions, including behavioral and advocacy, show a positive but weak signal for improving IPV victimization outcomes and related physical and mental harms; evidence is insufficient at this time.
- Available data are limited due to the small number of studies available, the heterogeneity of interventions and outcome measures, and the quality of the studies completed.

## **SUMMARY AND DISCUSSION**

Our evidence synthesis identified 39 articles encompassing 25 unique studies of IPV prevalence among U.S. active duty and Veteran populations. Of these, 13 studies (25 articles<sup>12,13,15,18,39-59</sup>) evaluated prevalence among active duty servicemembers, and 12 studies (14 articles<sup>7,27,60-71</sup>) among Veterans. Estimating the pooled prevalence of IPV was challenging due to variations in definitions of IPV, measurement instruments used to detect IPV, timing of IPV reports (e.g., 12-month, lifetime), and limitations in available population data across studies. These factors likely contributed to the underlying heterogeneity we found across studies as well as in our summary estimates. However, our findings provide support that IPV is a prevalent health concern among active duty servicemembers and Veterans.

We also identified six SRs that evaluated interventions aimed at decreasing exposure to IPV.<sup>2,73-77</sup> None of these SRs assessed primary IPV prevention strategies; all summarized literature on secondary prevention strategies such as screening for IPV. Overall, screening in health care settings increases identification of IPV victimization and appears to be feasible and acceptable. Screening alone, however, does not decrease rates of IPV victimization. Other secondary prevention strategies (behavioral interventions, advocacy interventions) provide insufficient evidence to demonstrate significant changes in IPV or IPV-related mental or physical harms. In the next section, we summarize the main findings by KQ.

## **SUMMARY OF EVIDENCE BY KEY QUESTION**

### **KQ 1: Prevalence of IPV**

#### *IPV Among Active Duty Servicemembers*

We identified 13 studies that assessed IPV prevalence among U.S. active duty populations.<sup>12,13,18,39-46,56,59</sup> Of these, 10 assessed perpetration outcomes<sup>12,18,40,42-46,56,59</sup> and 10 assessed victimization outcomes.<sup>13,18,39-42,45,46,56,59</sup> The most common metric of IPV across studies was prior exposure to physical violence in last year; thus, we used this outcome to summarize rates.

We were able to pool 6 studies<sup>12,15,42,46,48,59</sup> of IPV perpetration in the last year. Pooled estimates yielded a weighted estimated mean prevalence rate of 22 percent (95% CI, 17% to 27%) with significant heterogeneity ( $I^2 > 90\%$ ). Influence analysis yielded a range of 18 percent to 23 percent for IPV perpetration among active duty servicemembers.

We identified 4 studies<sup>47,48,54,59</sup> that assessed victimization by physical IPV among active duty servicemembers and that met criteria for a meta-analysis. The 12-month weighted estimated mean prevalence rate of physical IPV victimization of active duty servicemembers yielded a point estimate of 30 percent (95% CI, 17% to 43%) significant heterogeneity ( $I^2 > 90\%$ ). Influence analysis yielded a range of 25 percent to 33 percent of exposure to IPV victimization of active duty servicemembers.

We conducted subgroup analyses by (1) era of cohort recruitment (pre-2001 versus post-2001), (2) IPV severity, and (3) gender to probe for group differences. All analyses showed group differences, but each pooled subgroup estimate also had high heterogeneity. Variability in prevalence is likely due to a combination of factors, including the small number of pooled studies.

*IPV Among Veterans*

We identified 12 studies that assessed IPV prevalence among Veterans.<sup>7,27,60,61,63-70</sup> Eight of the 12 studies comprised clinical samples of VA users. In total, 5 studies assessed perpetration<sup>7,27,61</sup> and 8 studies assessed victimization.<sup>60,63-70</sup> Populations and outcomes were too heterogeneous to meta-analyze across the perpetration studies. Samples comprised specialized populations (e.g., Veterans seeking relationship help, newly returning OEF/OIF Veterans referred to behavioral health) with a high mental health burden, or were gender-specific samples. Moreover, IPV perpetration was defined inconsistently across studies, ranging from physical abuse as measured on the CTS to any form of domestic abuse. Thus, the prevalence of IPV perpetration within the last year ranged considerably (15% to 60%) across these five studies.

Of the eight victimization studies, two reported on sexual violence only and none provided estimates for male Veterans. The most common estimate of exposure to IPV was lifetime abuse; thus, we used lifetime estimates as the main outcome to syntheses the data. Four of the eight studies were amenable to meta-analysis (n= 2453).<sup>60,63,64,68</sup> The pooled lifetime weighted estimated mean prevalence rate of physical IPV victimization among women Veterans yielded a point estimate of 35 percent (95% CI, 25% to 47%). Influence analysis yielded a range of 30 percent to 41 percent victimization of women Veterans. The overall prevalence estimate had high heterogeneity, but limited data precluded moderation analysis to query for subgroup differences. Two studies reported on the prevalence of IPV victimization in the last year among women Veterans. Prevalence estimates in these two studies ranged from 7 to 12%.

Table 7 summarizes the prevalence of IPV for both Veteran and active duty populations.

**Table 7. Summary of IPV prevalence**

Population	IPV Perpetration (12-month)	IPV Victimization (12-month)	IPV Victimization (lifetime)
Active duty	19%	23%	---
Veterans	15% to 60%	7% to 12% (women only)	35% (women only)

**KQ 2: Intervention Strategies for IPV**

We identified four good-quality<sup>2,73-75</sup> and two fair-quality<sup>76,77</sup> SRs that evaluated interventions aimed at decreasing exposure to IPV and its associated harms. We identified no SRs that evaluated primary prevention interventions; all six SRs assessed secondary prevention interventions. Most focused on reducing victimization; only one study focused on perpetration. Four<sup>2,73,76,77</sup> of the six SRs assessed IPV screening interventions, three<sup>2,75,77</sup> assessed behavioral interventions, and one<sup>74</sup> assessed advocacy interventions. Below we summarize the results of these SRs and the strength of the evidence for these interventions.

*Screening for IPV Victimization*

Screening women can accurately identify those who have been exposed to IPV,<sup>2</sup> can increase disclosure of IPV victimization,<sup>2,76</sup> and incurs few adverse effects.<sup>2,73</sup> Specific results, however, vary by screening tool, populations, and setting. Repeated screenings during pregnancy increase identification of IPV victimization.<sup>77</sup> Screening interventions that included institutional support, ongoing training, and immediate access to referral services significantly increase rates of IPV

screening, disclosure, and identification compared with screening interventions using a less comprehensive approach.<sup>76</sup> In an emergency room environment, computerized IPV screening had high feasibility and acceptability.<sup>73</sup> Screening interventions may decrease recurrence of IPV and physical and mental harms associated with IPV, but the evidence is limited (one RCT<sup>2</sup>). Overall based on multiple studies, there is high strength of evidence that IPV screening can detect women exposed to IPV. There is insufficient to low strength of evidence that IPV screening alone influences all other outcomes (i.e., rates of IPV, IPV-related physical or mental harms, referrals and treatment for IPV, mortality).

### *Behavioral Interventions*

We identified three SRs<sup>2,75,77</sup> that evaluated behavioral interventions. Two of these synthesized the evidence on behavioral interventions among women exposed to IPV, and one<sup>75</sup> focused on male perpetrators of IPV. The SR that focused on perpetration synthesized the evidence on CBT for men who abuse their female partners. Compared with nonintervention controls, CBT for men who physically abuse their female partners reduced rates of IPV but did not demonstrate a statistically significant improvement across four RCTs (RR 0.86; 95% CI, 0.54 to 1.38). Overall, the evidence around interventions focusing on reducing and treating perpetration is limited; the strength of evidence is low due to imprecise estimates (wide confidence intervals) and inconsistent results across the four included studies.

For the two SRs that focused on women victims of IPV, one<sup>77</sup> focused on pregnant women and identified four studies, and the other SR<sup>2</sup> identified six RCTs, three of which were conducted in pregnant or postpartum women. Some studies were included in both SRs, thus there were only five unique studies among pregnant or postpartum women across the two SRs. The behavioral interventions tested in these studies were heterogeneous and included home visitation, nurse management, unspecified counseling interventions plus resource card, or mentor support. Among pregnant and postpartum women, behavioral interventions that include counseling reduced IPV<sup>2,77</sup> and improved birth outcomes.<sup>2</sup> However, strength of evidence was graded as insufficient. Across these SRs, there were few studies identified, and the types of behavioral interventions were quite different from each other, which hampered drawing conclusions across this category of interventions.

### *Advocacy Interventions*

We identified one SR<sup>74</sup> that assessed 10 advocacy intervention studies. Again, intervention approaches were heterogeneous and included education and support to enhance provision of legal, housing, and financial advice; promote access and use of community shelters, emergency housing, and psychological interventions; and provide safety planning. Intensive advocacy interventions (>12 hours in duration) for women recruited in domestic violence shelters reduced physical abuse 12 to 24 months postintervention (OR 0.43; 95% CI, 0.43 to 0.83) but not in the year immediately following intervention. Brief interventions (<12 hours) increased the use of safety behaviors. No significant effects were found for mental harm (e.g., PTSD, depression) or use of IPV-related services. There is low strength of evidence that intensive advocacy interventions reduced IPV; results were consistent, but confidence intervals were wide.

## CLINICAL AND POLICY IMPLICATIONS

Compared with population-based studies conducted in samples not selected for active duty or Veteran status, we report higher rates of 12-month IPV perpetration and victimization among active duty women servicemembers; considerably higher 12-month IPV victimization rates for active duty men; and comparable rates of both 12-month IPV perpetration among active duty men and lifetime IPV victimization among Veteran women. We also found that the 12-month victimization rate is higher among active duty men than active duty women—a pattern that has also been observed in civilian studies (Table 8).<sup>79</sup> Some differences between civilian and active duty or Veteran populations can be attributed to dissimilar distribution of population characteristics between the two groups (e.g., age distribution, greater proportion of African Americans and Hispanics among active duty and Veteran populations). However, factors unique to military life such as military deployments that result in family separation and reintegration issues,<sup>7</sup> and combat-related health issues (e.g., PTSD, head injuries) likely contribute to relationship stress and IPV among active duty servicemembers, Veterans, and their intimate partners.<sup>9-12</sup>

**Table 8. Comparison of IPV prevalence in active duty servicemembers, Veteran, and community populations**

Population	IPV Perpetration (12-month)		IPV Victimization (12-month)		IPV Victimization (Lifetime)	
	Women	Men	Women	Men	Women	Men
Active duty	29%	18%	26%	31%	—	—
Veterans	22% <sup>a</sup>	15% to 60% <sup>b</sup>	7 to 12%	—	35%	—
Community <sup>c</sup>	16%	15%	6%	5%	36%	29%

<sup>a</sup> One study only.<sup>70</sup>

<sup>b</sup> Some Veteran studies of IPV perpetration included women, but the majority were men.

<sup>c</sup> Community estimates for perpetration are from Field et al., 2003,<sup>69</sup> and for victimization from Black et al., 2011.<sup>1</sup>

Evidence from our synthesis of SRs assessing IPV interventions demonstrates that standardized IPV screening interventions in a health care setting increases identification of IPV victimization. Moreover, Nelson et al.<sup>2</sup> found minimal adverse effects and low levels of harm related to IPV screening for women receiving health care services. Coupled with the prevalence of IPV we report here, these findings support the need to consider adopting standardized IPV screening for use in the VA. However, our review also highlights the need to take a comprehensive approach to implementing such screening programs in the VA.

Our meta-synthesis finds that multicomponent screening interventions that include institutional support, use effective screening protocols, thorough initial and ongoing training of providers, and immediate access to referral services increase provider use of screening, patient disclosure, and, ultimately, identification of IPV. This finding suggests that establishing a screening program without building provider self-efficacy to screen and establishing sufficient support for referral and treatment mechanism will undermine the effectiveness of IPV screening programs. Our synthesis of the SR literature found some evidence to support behavioral counseling and advocacy interventions for women who screen positive for IPV; however, the evidence was often inconsistent—likely due to the wide variability in strategy, content, and intensity.

While primary care physicians and mental health clinicians may be ideally positioned to implement screening, successful IPV screening programs must also consider educating and enlisting the services of the entire health care team, including other providers, nurses, and social workers, to create a seamless system from screening to timely referral to appropriate services. The development of resource toolkits for clinicians that include (1) appropriate community or Veteran resources, (2) information on local and state laws regarding IPV, and (3) availability of counseling, legal, and advocacy referrals could help overcome some of the provider and institutional barriers to providing IPV screening throughout the VA healthcare system. Due to the sensitive nature of IPV screening, cultural sensitivity and confidentiality concerns would also need to be considered in the development of any IPV screening program. The Institute of Medicine recommends that women be screened about current and past violence and abuse in a culturally sensitive and supportive manner,<sup>80</sup> and assuring patient confidentiality and safety is paramount.

Another consideration when planning an IPV screening program is how often to make assessments. Most screening tools were designed to detect IPV in the previous year. Thus, an annual interval may be optimal. Any screening program will need to consider the optimal use of provider and staff resources in addition to the benefit from screening for IPV victimization obtained from repeated followup screenings.

While the evidence we report here on effectiveness of screening for IPV was conducted among female populations, we also report considerable rates of IPV victimization among male populations. The U.S. armed services and the Veteran healthcare system currently remain largely male in population despite the growing number of female servicemembers and Veterans. The VHA provides medical and mental health care for an estimated 8.6 million Veterans each year, and only an estimated 6 percent to 8 percent of the Veterans cared for are women.<sup>81</sup> Indeed, our data suggest that the overall rates of IPV victimization among male active duty servicemembers are at least equal to if not higher than rates of overall IPV victimization among female active duty servicemembers. However, women are more likely to be injured or murdered as a result of IPV.<sup>82-84</sup> This fact raises the question of whether IPV screening programs in the VA should be extended to men as well. In constructing a comprehensive national program to address IPV, consideration should be given to the prevalence of IPV victimization and perpetration, the effectiveness of interventions to decrease exposure to IPV and decrease the associated mental and physical harms, the potential benefits and harms of screening, and if universal or women-only screening should be adopted.

## **Guidelines**

Currently, a number of organizations recommend some form of screening to detect IPV victimization. Most guidelines focus screening recommendations among women. The American Congress of Obstetricians and Gynecologists recommends that physicians screen all women for IPV victimization at periodic intervals during family planning, pregnancy, and annual examinations.<sup>78,85</sup> Similarly, the Affordable Care Act recommends IPV screening and counseling as a core part of women's preventive health visits, and the Institute of Medicine recommends universal screening and counseling of all women for interpersonal and domestic violence.<sup>80</sup>

The American Medical Association (AMA) makes a broader recommendation regarding all patients and thereby actively includes men in addition to women. In a position statement, the

AMA broadly encourages physicians to routinely inquire about the family violence histories of their male and female patients while being alert to men presenting with injuries suffered as a result of IPV because these men may require intervention as either victims or abusers themselves. The AMA recommends identifying patients currently experiencing abuse or threats of IPV to discuss safety issues with the patient before leaving the office, to develop a safety or exit plan, and to refer patients to appropriate medical or health care professionals or community-based trauma resources as soon as possible.<sup>86</sup>

The USPSTF has recently updated its recommendations regarding IPV victimization screening in women and recommends screening women of childbearing age (defined as 14 to 46 years of age) for IPV. In addition, the USPSTF recommends providing services or interventions to women who screen positive for IPV.<sup>78</sup> Adopting the USPSTF recommendations would be timely for the VHA because over the past decade, the number of women Veterans using the VHA has nearly doubled, and compared with men, women were, on average, substantially younger: 42 percent of women and 12 percent of men were younger than 45 years of age or of childbearing age.<sup>81</sup>

Our results broadly support these recommendations; however, our review highlights the need for developing an a priori detailed plan of action for treatment and followup of positive IPV screening results.

## **APPLICABILITY**

Our results on prevalence are highly applicable to Veteran populations seeking care through the VA healthcare system; these studies were conducted in Veterans or among potential future Veterans (i.e., active duty servicemembers). Also of the 12 studies conducted among Veterans, 8 were conducted among populations comprising exclusively VA users. For our pooled analyses, we included only studies conducted in broad populations and used the most comparable estimate of IPV collected across studies: physical violence. However, variability still existed in how IPV was defined and measured, likely contributing to the heterogeneity we report across studies and in pooled estimates.

Results of our synthesis of the SR literature for IPV interventions also are likely to apply to Veterans; however, the positive effects of RCTs do not always translate into clinical practice. RCTs usually have tightly controlled eligibility criteria; thus the characteristics of patients in RCTs may vary from the characteristics of patients seen at VA medical centers. For example, there are higher rates of PTSD, depression, and traumatic brain injuries in VA populations compared with civilian populations; these factors may complicate implementation of IPV screening and treatment programs. Also, interventionists in studies may receive specialized training and resources that may be difficult to replicate in the typical clinical practice. Last, patients in RCTs tend to be more adherent to interventions. Across all studies in the included SRs, only one intervention study was conducted in a VA setting.

## **STRENGTHS AND LIMITATIONS**

Our study has a number of strengths, including a protocol-driven review, a comprehensive search, and a careful quality assessment. Also, our meta-analysis took advantage of both direct

(estimated from within the same study) and indirect (estimated from across different studies) when assessing key subgroups of gender and race. Another strength is the opportunity to meta-synthesize the evidence on IPV interventions from existing SRs in order to triangulate the overarching evidence across a wide body of literature, settings, and intervention approaches.

Our report, and the literature, also had limitations. Though we were able to conduct meta-analysis and subgroup analysis for some IPV prevalence rates, all estimates demonstrated significant heterogeneity. Thus, variability in prevalence is likely due to a combination of factors, and the limited number of studies precluded meta-regression. Also, we identified only five studies that assessed IPV perpetration among Veterans. However, each of these studies was conducted in highly selective populations (e.g., WWII prisoners of war, populations seeking relationship help), making meta-analysis imprudent and comparisons to broader Veteran populations impossible. We also did not identify any studies that assessed prevalence of IPV victimization among male Veterans, thus, we were not able to provide estimates for this population and behavior. Lastly, only three studies of IPV among Veterans were conducted among national samples; thus, our results specific to Veterans are likely more applicable to VA user than to all Veterans. More studies should be conducted among nationally representative samples of Veterans. Our meta-synthesis of the evidence on IPV interventions also has some limitations. We were able to include only intervention approaches with peer-reviewed evidence syntheses. Thus, emerging intervention approaches were likely not included if they did not have a peer-reviewed evidence synthesis.

## **RECOMMENDATIONS FOR FUTURE RESEARCH**

We used the framework recommended by Robinson et al.<sup>87</sup> to identify gaps in evidence and classify why these gaps exist (Table 9). This approach considers PICOTS (population, intervention, comparator, outcomes, timing, and setting) to identify gaps and classifies them as due to (1) insufficient or imprecise information, (2) biased information, (3) inconsistency or unknown consistency, and (4) not the right information. VA and other healthcare systems should consider their clinical and policy needs when deciding whether to invest in research to address gaps in evidence. Specific research questions can be evaluated quantitatively, using value-of-information analysis, which uses Bayesian methods to estimate the potential benefits of gathering further information through research.<sup>88</sup>

**Table 9. Evidence gaps and future research**

Evidence Gap	Reason	Type of Studies to Consider
Limited to no evidence for these populations and behaviors: <ul style="list-style-type: none"> <li>• Male Veteran IPV perpetration</li> <li>• Male Veteran IPV victimization</li> <li>• Female Veteran IPV victimization in last year</li> <li>• Nationally representative samples of Veterans for both perpetration and victimization</li> </ul>	Insufficient information	High-quality cross-sectional studies in broad populations
Studies that address primary prevention of IPV	Insufficient information	RCTs Observational comparative effectiveness studies
Effectiveness of screening techniques to identify males with exposure to IPV victimization	Insufficient information	Studies of diagnostic accuracy RCTs Observational comparative effectiveness studies
Effectiveness of screening techniques to identify perpetrators of current or past IPV	Insufficient information	Studies of diagnostic accuracy RCTs
Studies on interventions to reduce IPV in screen-detected populations	Insufficient information	RCTs Observational comparative effectiveness studies

## CONCLUSION

Our review highlights that IPV victimization and perpetration are prevalent among active duty servicemembers and Veterans. Overall, IPV screening interventions for women in health care settings increase identification of victimization and appear to be feasible and acceptable. Screening programs are maximized when adequate support for clinicians and screen-detected women are provided. Other secondary prevention interventions provide insufficient evidence to demonstrate significant changes in IPV or IPV-related mental or physical harms. Our review points to gaps in the existing evidence. No identified studies reported on IPV victimization among male Veterans; however, we report high rates of victimization among male active duty servicemembers. Thus, it is likely that male Veterans would also have elevated rates of IPV victimization. Only three studies of IPV among Veterans were conducted among national samples. Many Veteran studies were conducted in specialty mental health clinics or highly selected populations. Future research on IPV should be conducted among nationally representative samples of Veterans. Moreover, we identified no SRs of primary IPV prevention strategies; all SRs summarized literature on secondary prevention strategies (e.g., IPV screening). These findings demonstrate gaps in the evidence; future studies are needed. However, current evidence suggests that screening women for IPV can identify women who have been exposed to IPV. In the absence of strong evidence to support any single strategy to reduce risks associated with IPV in screen-detected populations, behavioral and advocacy interventions should be considered as adjuncts to IPV screening programs because they have some partial impact on IPV-related mental or physical health outcomes and show limited evidence that they are associated with harms.

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