

# Narrative Review of Barriers to the Secondary Prevention of Sexually Transmitted Infections: Implications for the Military Context and Current Research Gaps

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## Abstract

This paper presents a narrative review of research on barriers to the secondary prevention of sexually transmitted infections (STIs) in primary care, such as STI screening and treatment, from the perspective of individuals and health care providers. Limited work has been conducted on barriers to secondary prevention in the military context. However, research in other contexts shows that the success of secondary prevention may depend on knowledge about STIs, perceptions of risk or stigma attached to STIs, the availability of time and resources to seek testing and treatment, and the quality of exchanges between health care providers and their patients. For individuals, additional considerations may include their concern for health, fear of a positive diagnosis, and inconveniences associated with the screening process. As most studies in this area have been conducted in a civilian context, it is recommended that research be conducted on military personnel and health care providers to assess: knowledge and perceptions of STI risks, their impacts on health, and ways they can be prevented; the stigma and social norms associated with STIs; the availability and accessibility of testing; and the factors that influence the quality of patient-provider interactions in the military health care context.

## Introduction

Having been linked to a wide range of conditions, including pelvic inflammatory disease, chronic pain, reproductive problems and neurological disorders, as well as an increased risk of human immunodeficiency virus (HIV) infection, sexually transmitted infections (STIs; previously referred to as sexually transmitted diseases, or STDs) can pose a threat to individuals' long-term health and well-being<sup>1</sup>. Comprised primarily of younger adults, military populations may be at greater risk of STIs<sup>2</sup>. Indeed, STIs have, historically, been considered a problem in militaries<sup>3</sup>. Some recent findings pointing to increasing trends in the U.S. military have supported this view<sup>4</sup>.

Given the preventable and treatable nature of STIs, much emphasis has been placed on developing guidelines for their prevention. Many of the effective preventive strategies have relied on secondary prevention, rather than primary prevention through the promotion of reductions in high-risk behaviour. According to the World Health Organization (WHO) and the Joint United Nations Programme on HIV/acquired immunodeficiency syndrome (AIDS)

(UNAIDS), secondary prevention involves “the provision of treatment and care for infected and affected persons. The activities should include:

- the promotion of health care seeking behaviour directed not only at those with symptoms of STDs, but also those at increased risk of acquiring STDs, including HIV infection;
- the provision of clinical services that are accessible, acceptable, and effective, and which offer diagnosis and effective treatment for both symptomatic and asymptomatic patients with STDs, and their partners; and,
- support and counselling services for both STD and HIV patients<sup>5</sup>.” (p.11)

Secondary prevention by health care providers within the primary care setting might thus include behaviours such as education of patients, particularly those at high risk for acquisition of an STI, routine or periodic screening for STIs, and treatment and/or counselling for infected persons and their partners. Nevertheless, the responsibility for secondary prevention is shared with individuals, who must seek testing and treatment themselves. A

number of psychosocial factors may act as barriers to the success of secondary prevention of STIs. This report provides a narrative review of research on such barriers from the perspective of both health care providers and individuals. Specifically, the review includes studies that investigated facilitators of and barriers to engagement in secondary STI prevention behaviours, specifically STI screening, risk assessment, and patient counselling for health care providers, and those studies that explored correlates of STI-screening seeking and acceptance among individuals. Based on some key findings, some existing research gaps and potential directions for future military personnel research are identified.

### Secondary Prevention Behaviours in Health Care Providers

Little research on adherence to STI prevention guidelines has been conducted in the military context. Research conducted in the civilian domain may nevertheless provide insight into the experiences of military health care providers. One study of British Columbian primary care physicians, for instance, found that many physicians did not adhere to the Canadian STI guidelines, even though most possessed a copy and perceived the guidelines to be useful<sup>6</sup>. Further, Australian providers have been shown to often fail to comply with certain components of STI prevention guidelines, such as sexual history taking and partner notification<sup>7</sup>.

Aside from adherence to guidelines, research has shown that health care providers in the general population often do not engage in STI prevention behaviours with their patients. In one study of family physicians in Quebec, less than half of the participants reported taking a sexual history during a general medical examination<sup>8</sup>. Research in the U.S. has found similar results, with providers often only eliciting sexual history among patients in high-risk groups and many failing to include prevention counselling in this discussion<sup>9-10</sup>. Moreover, even when providers are generally diligent about sexual history taking, a notable proportion still neglect to regularly screen their patients for STIs, such as chlamydia<sup>11</sup>. Low chlamydia screening rates, particularly among asymptomatic patients, have been reported in other U.S., Canadian, and U.K. research<sup>12-17</sup>.

### Secondary Prevention Behaviours in Individuals

Many individuals fail to engage in STI prevention behaviours. For instance, very few people report motivation to be tested for STIs in the absence of symptoms<sup>18</sup>. Even when convenient STI screening

is offered as part of a research project, often, more than a third of individuals recruited do not accept the opportunity to be screened<sup>12</sup>.

As well, patients' STI prevention behaviours may differ according to sex. Female patients have been shown to be more likely to be screened for STIs<sup>19-22</sup>, though males might be more likely to be tested for STIs with more serious health consequences, such as HIV<sup>23</sup>. These sex disparities may be due to more convenient opportunities for STI screening among females, such as during their annual Pap test.

### Barriers to Secondary Prevention in Health Care Providers

Some psychosocial characteristics have been found to affect health care providers' STI prevention behaviours.

#### **Education, Training, and Knowledge**

STI knowledge may be impacted by STI-related education and training during medical school or residency<sup>24</sup>, and many providers perceive this training to be inadequate<sup>25</sup>. These findings hold important implications for STI prevention practices, because providers with greater perceived education and training in STI care hold more positive attitudes toward STI prevention<sup>25</sup>. They are also more likely to assess STI risk<sup>10</sup>, screen for STIs<sup>19</sup>, and to engage in sexual health promotion activities<sup>26</sup>.

Regardless of the cause, research has identified some deficiencies in knowledge of STIs among health care providers. In one U.S. study, for example, a notable proportion of the providers surveyed failed to demonstrate good knowledge about the management of STIs in women based on their responses to questions on basic elements of diagnosing and treating patients in specific clinical scenarios<sup>24</sup>. Such knowledge gaps, in turn, have frequently been shown to act as barriers to STI prevention behaviours, including STI screening<sup>11,16,24,26-27</sup>.

#### **Lack of Time**

In one Irish study<sup>26</sup>, many of the health care providers interviewed cited a heavy workload or insufficient time due to other continuing education courses as reasons for not participating in sexual health training. Indeed, lack of time in health care appointments is commonly reported by providers as a barrier to engaging in STI prevention practices<sup>25</sup>, including proposing screening<sup>12,16-17,19,27</sup>. In particular, time constraints are reported to be barriers to the more time-consuming activities, such as sexual history taking, educating patients

on STI risks<sup>9,26,28-29</sup>, and counselling patients with a positive STI diagnosis<sup>30</sup>. In addition to individual appointment time constraints, insufficient staff for treating high patient demand may lower the priority of STI screening and counselling<sup>28</sup>.

### **Perceived Patient Risk**

Because of time constraints on care appointments, research has shown that providers may limit their STI prevention actions to patients who might be considered more at risk for STIs. For instance, some U.S. care providers of adolescents and young adults have stated that they would be more likely to counsel or test their patients for STIs if risky sexual behaviour was suspected<sup>29</sup>, and less likely if they perceived chlamydia to be uncommon in this population of patients<sup>14</sup>. Canadian health care providers, meanwhile, have been shown to be more likely to educate patients on condom use if they perceive these patients' STI risk to be high<sup>8</sup>. Moreover, if the patients do not consider themselves at risk for STIs, U.S. providers are less likely to suggest screening<sup>12,19</sup>. Because some STIs are asymptomatic, however, and because patients may not always be honest with providers about their STI risk-related behaviour, a practice of screening only those patients perceived to be most at risk may fail to meet the secondary prevention objective of detecting, treating, and stopping the spread of STIs.

### **Provider Comfort and Confidence**

Although most providers generally report feeling at ease in discussing sexual health issues with patients<sup>16,25,31</sup>, few actually like conversations of this nature<sup>25</sup>, and some feel uncomfortable having them with high-risk patients, such as intravenous drug users<sup>31</sup>. Providers also tend to feel more comfortable discussing sexual health topics with patients of the same sex<sup>8,26</sup>. Provider comfort in STI-related care is important, because feeling uncomfortable talking about sexual health with patients has been shown to be associated with a decreased likelihood of engaging in these discussions<sup>17</sup>, of taking sexual histories<sup>9,11,31</sup>, and in suggesting STI screening<sup>16,19,27</sup>.

Health care providers who feel uncomfortable providing STI care have lower self-perceptions of their ability to affect patients' STI risk-taking behaviour<sup>31</sup>. Most providers are confident in their abilities to discuss sexual history and STI screening with patients<sup>16</sup>, but many do not believe they are able to influence patients' risky sexual behaviours<sup>16,25</sup>. These perceptions can impact providers' STI prevention actions, as providers with lower feelings of self-efficacy in educating patients on STI risks are less likely to counsel patients about condom use<sup>8</sup>

and to screen patients for STIs<sup>16</sup>. Clearly, providers' feelings of comfort and confidence in providing STI care have an effect on their STI prevention practices.

### **Perceptions of Patient Comfort and Stigma**

In addition to their own feelings of comfort in discussing sexual health matters, the level of comfort health care providers perceive in their patients during these conversations also impacts upon their engagement in STI prevention behaviours. For example, the anticipation of adverse emotional reactions from patients when discussing sexual health issues has been cited as a barrier to providers' obtainment of sexual histories from their patients<sup>9</sup> and provision of STI diagnosis counselling<sup>30</sup>. These negative emotions are related to the stigma surrounding promiscuity and, thus, with the shame often associated with STIs. Consequently, the belief that patients will feel embarrassed or offended at the suggestion that they might be at risk for an STI can deter providers from STI prevention and counselling<sup>15,29</sup>, including providing STI education materials<sup>32</sup> and screening for STIs<sup>16,19,27</sup>. Reducing the stigma surrounding STIs has been suggested by providers as a method of improving screening initiation rates among health care providers<sup>27</sup>.

### **Barriers to Secondary Prevention in Individuals**

#### **Lack of Time or Inconvenience**

Some barriers to health care providers' STI prevention behaviour are also significant obstacles for patients. For instance, the time required to visit a clinic for STI testing and to complete the screening procedure has been cited by many individuals as a reason for not getting tested for STIs<sup>21</sup>. In addition, the time required to access STI services can make STI prevention challenging. Some people, for example, have said that they would be more likely to get tested for STIs if there were a screening site near their home or workplace<sup>33</sup>. Lack of transportation, particularly for patients residing in geographically remote areas, is also a substantial barrier to screening<sup>34</sup>. Furthermore, the inconvenience of some clinics' hours of operation or waiting times for appointments may prevent some individuals from seeking an STI test<sup>33,35-36</sup>.

#### **Procedure Discomfort**

Aspects of the screening procedure itself have also been shown to inhibit individuals from obtaining an STI test. People who perceive STI testing to be physically uncomfortable or even painful are less likely to undergo screening<sup>19,33,35,37-39</sup>. The requirement to remove one's clothing for the physical examination

element of some STI testing procedures is also a concern for some patients<sup>38,40</sup>. The apprehension and embarrassment associated with screening processes, such as urethral swabbing and pelvic examination, also appear to be influential in STI testing decisions, because most individuals would be much more likely to screen if more private and less invasive methods were available, such as home-based urine testing procedures<sup>18-19,21,33,37-39,41-42</sup>.

### **Apprehension About Positive Diagnosis**

Other psychological aspects of STI prevention can reduce the likelihood of STI screening. The negative emotions associated with a positive STI test result have been cited as a barrier to engagement in STI screening<sup>35</sup>, especially for potentially life-threatening STIs, such as HIV<sup>43</sup>. Waiting for test results<sup>38</sup> and having to notify sexual partners of an STI diagnosis<sup>37</sup> are also anxiety-inducing aspects of secondary STI prevention that discourage some individuals from testing. As a result, many people have stated that they would prefer not to know or think about whether they have an STI<sup>35,43</sup>.

### **Lack of Knowledge**

Beyond elective ignorance about STI status, many people lack information about important aspects of STI prevention. Research has shown poor awareness of certain types of STIs, such as chlamydia and genital herpes, particularly about their typically asymptomatic nature<sup>33</sup>. Knowledge of the importance of screening to detect asymptomatic STIs is essential in providing individuals with the motivation to be tested. The low public awareness of the facets of common, treatable STIs (due to media attention on HIV and AIDs)<sup>35</sup>, the existence of frequently asymptomatic STIs, and the methods of STI transmission and prevention have been associated with a reduced likelihood of screening<sup>37</sup>.

### **Perceived Risk**

Perhaps few people are motivated to be tested for STIs in the absence of symptoms because few people know that some STIs can be asymptomatic<sup>12,35,40-41</sup>. Low perceived risk is a commonly cited barrier to STI screening<sup>12,19-20,23,35,37,40-41,43</sup>. Engagement in risky sexual behaviours, such as having multiple partners, high-risk partners, and unprotected sex have been shown to increase STI testing intentions and behaviour, primarily due to augmented perceptions of susceptibility to STIs<sup>12,21,23,35,37-38,40</sup>. However, those with low perceived risk may still require screening, because many individuals lack accurate knowledge about their actual vulnerability to STIs (e.g., that STI

risk may still be high in the absence of symptoms; an underestimation of a partner's STI risk level).

### **Stigma and Social Norms**

The apprehension surrounding an STI diagnosis is at least partly attributable to the judgment society places on those with an illness of sexual aetiology. There appears to be a perceived negative stigma associated with even common, treatable STIs<sup>37,40,44</sup>. Even without a positive diagnosis, simply engaging in STI prevention actions seems to imply sexual promiscuity. The anxiety associated with the possibility of others discovering that one has attended a sexual health clinic or that one has been tested for STIs has been shown to inhibit some people from seeking screening<sup>19-20,33-35,39,45</sup>. Many people have indicated that normalizing STI prevention as an overall public health initiative—instead of it being seen as an action exclusively for those most at risk—would make them more likely to be tested<sup>33,44</sup>.

### **Interactions with Health Care Providers**

Because they are often responsible for suggesting STI prevention behaviours, such as STI screening, providers can contribute to the reduction of STI-related stigma. Some patients are hesitant to engage in STI prevention because they are embarrassed about discussing sexual health with health care providers and fearful that the provider will judge their sexual history<sup>34,40</sup>. Indeed, some aspects of the patient-provider relationship have been shown to increase the likelihood of STI screening: trust that the provider will maintain confidentiality<sup>39,46</sup>, projection of an empathic, non-judgmental attitude<sup>33-36,45-46</sup>, and the insistence that STI prevention is a common, health-promotion practice<sup>41,44</sup>. In other words, patients seem to be more likely to engage in secondary STI prevention when their provider is perceived as trustworthy, understanding, and concerned about their well-being.

### **Concern for Health**

The decision to be screened for STIs depends on the importance individuals place on their overall health maintenance and the extent to which they believe STIs will impact their well-being. Individuals who view the consequences of even common, treatable STIs as serious are more likely to be tested<sup>35,37</sup>. In addition, people who consider STI screening as part of total health protection are more likely to be screened<sup>23,40,47</sup>, because it allows for early detection and treatment<sup>41,44</sup> and because it could protect their future fertility<sup>40-41</sup>. Accordingly, individuals who use health services more often are also more likely to engage in STI prevention behaviours, such as

screening<sup>20</sup>. In short, people who do not consider the long-term health effects of STIs to be a serious or a crucial component of their health protection may not seek screening for STIs.

### Concern for Partner's Health

In addition to concern for their own well-being, individuals may be less likely to be screened if they are not concerned about the effects of an STI on their partner's health. People on brief visits to locations away from home are less likely to be tested for STIs due to a lack of attachment and concern for transmitting STIs to their casual partners, essentially strangers, in this region<sup>36</sup>. The desire to protect partners and maintain their trust is a common motivator for screening<sup>47</sup>, demonstrating that, in the absence of concern for partners' well-being, secondary STI prevention is less likely to occur.

### Military Implications and Current Research Gaps

Taken together, results point to factors that may impact decisions by health care providers and individuals to engage in secondary STI prevention. From both perspectives, the success of secondary prevention may rest on the level of knowledge about STIs, perceptions of the level of risk or stigma attached to STIs, the availability of time and resources for prevention, and the quality of exchanges between health care providers and their patients. For individuals, additional considerations may include overall concern for theirs or their partner's health, their apprehension of possible consequences of a positive diagnosis, and other possible inconveniences associated with the screening itself. While the majority of the research pointing to these factors was conducted in a civilian context, results have potential relevance for the military context.

Although limited research has focused on barriers to secondary prevention in the military context, the factors associated with primary prevention practices have received some attention. Russak and colleagues<sup>48</sup>, for instance, conducted a systematic review of HIV/AIDS behavioural prevention programs aimed at military personnel. Their review identified four prevention interventions that addressed knowledge about risk, high-risk behaviours, and prevention, in addition to providing prevention-skills building. These interventions demonstrated favourable effects by mitigating one or more psychosocial barriers, such as service members' knowledge about HIV/AIDS, their willingness to engage in preventive behaviours, and/or their attitudes toward prevention. Other work has examined female U.S. Army personnel's perceptions of a self-administered intervention designed to promote safer sexual practices during

travel<sup>49</sup>. This intervention also focused on knowledge about risk and STI prevention skills, but specifically targeted women. Though the effectiveness of the intervention was not examined, the intervention was rated favourably by Army women.

Even though prevention interventions aimed at improving knowledge and perceived STI risk—factors that could also act as barriers to secondary prevention—hold promise for enhancing the primary prevention of STIs in the military context, the role of secondary prevention must not be overlooked. A recent study of STIs among HIV-positive active duty U.S. military personnel revealed that over a third of individuals (34%) contracted an STI after receiving an HIV-positive diagnosis. In total, 157 individuals accounted for 186 incident cases of gonorrhoea, while 312 accounted for 364 incident cases of syphilis. Thus, a small proportion of HIV-positive service members obtained multiple STI diagnoses after having received HIV-positive diagnoses. These results show that high-risk behaviours may persist among military personnel, even after they have personal experience with and knowledge of the high-risk behaviour<sup>50</sup>. Such examples emphasize the importance of secondary prevention in overall efforts to reduce STI incidence.

Features of the military environment may facilitate secondary STI prevention. Relative to their civilian counterparts, U.S. military personnel have easy access to health care<sup>51</sup>. In addition, routine and periodic medical assessments provide other opportunities for screening and treating STIs among military personnel. Many points of entry for advanced training involve medical exams, screening, or vaccinations<sup>2</sup>. A few prevention initiatives have benefited from these aspects of the military environment. For example, in an effort to reduce rates of chlamydia, the U.S. Air Force, Navy, and Marine Corps incorporated screening into the processing of female recruits<sup>52-53</sup>. Evidence suggests that screening female military recruits results in significant cost savings<sup>54</sup>. Because screening and treating male personnel for STIs is a necessary component of prevention, some researchers have proposed STI screening for male recruit and active duty populations in the U.S. military<sup>52</sup>. A more recent analysis showed that both targeted and universal screening of male recruits could be cost-effective<sup>55</sup>.

While routine medical assessments and accessible health care could diminish the impact of inconvenience and lack of time on secondary STI prevention among military health care providers and personnel, frequent travel or deployments could make the prompt screening, treatment of STIs, and follow-up more difficult<sup>52</sup>. A study of transient

workers in northeastern British Columbia—whose work schedules and experiences might be comparable to those of military personnel deployed in remote areas—revealed that limited opportunities to access testing and prevention resources inhibited STI testing<sup>34</sup>. Research is needed to determine the circumstances under which lack of time and access to appropriate health services interfere with STI care in military personnel.

Since frequent travel and deployments have been linked to increased high-risk behaviour<sup>56</sup>, it is necessary for military personnel who have engaged in high-risk behaviour to seek testing regularly and actively. As well, it has been argued that routine screening (i.e., at annual periodic health assessments) may not be sufficient because risk of re-infection may be high and military personnel may be re-infected shortly after treatment<sup>57</sup>. Decisions to seek STI testing outside of routine medical assessments may be based, in part, on military personnel's knowledge of the risks and asymptomatic nature of STIs. Yet knowledge about STI risk may be insufficient. One study assessed U.S. Army recruits' knowledge of various STI-related facts as part of an evaluation of the feasibility and short-term effectiveness of a knowledge-based intervention for STIs. Results revealed that 30% of recruits were not aware that chlamydia and gonorrhoea could be treated with antibiotics. As well, 23% of recruits were not aware that oral sex placed them at risk of contracting an STI<sup>58</sup>. Interventions aimed at enhancing knowledge about STIs have been linked to reductions in high-risk behaviours, such as alcohol use, and increased safer sex practices, such as condom use<sup>48,58</sup>. However, it remains to be determined whether knowledge about STIs is related to decisions to seek STI testing in military personnel.

Notwithstanding the potential importance of improving knowledge of STIs, doing so may not impact individuals' perceptions of their own level of risk. A recent study found that female U.S. Marine Corps recruits demonstrated an optimistic bias regarding their perceived risk of contracting an STI and generally perceived themselves to be invulnerable. In turn, those who reported never using condoms reported lower perceived risk relative to occasional users<sup>59</sup>. Research has shown that perceptions of invulnerability may be greater in young men than in young women<sup>60</sup>. However, little research to date has explicitly examined perceptions of STI risks among male military personnel, who often comprise the majority of the military population. Furthermore, no studies have examined the relationship between perceptions of STI risk and STI testing decisions among military personnel.

Beyond knowledge and perceptions of risk, the perceived stigma surrounding STIs and a positive STI diagnosis may be especially important in decisions to seek STI testing among military personnel. Military personnel must often work and live in close quarters with colleagues, and coupling within interrelated communities may occur<sup>51</sup>. At the same time, health care providers in military facilities may have multiple relationships with patients: as providers, colleagues, and friends. Because of the close proximity and ties with colleagues, concerns about confidentiality could result in a reluctance to be screened for STIs among military personnel.

Finally, STIs may not be viewed by military personnel as an important health issue, because physical symptoms may not always occur and serious health impacts may be delayed. It has been noted that STI programs have not been prioritized by military leaders, due to other priorities and budgetary restrictions<sup>61</sup>. While the most prevalent STIs may not interfere with the ability of military personnel to carry out their duties<sup>61</sup>, some STI sequelae (e.g., pelvic inflammatory disease) could have serious ramifications for the health of female service members during deployments, especially because they may not have ready access to health care<sup>52</sup>. It remains to be determined, however, whether military personnel are aware of the potential impacts of STIs on their health and operational readiness.

### Conclusion

A considerable amount of research has focused on identifying barriers to the secondary prevention of STIs in civilian populations from the perspectives of individuals and health care providers. The bulk of research with military personnel has focused on determinants of risky sexual behaviour and the use of condoms. Efforts to enhance the secondary prevention of common STIs (such as chlamydia) in the U.S. military are believed to hold promise in reducing the burden of STIs among military personnel<sup>54</sup>. Still, it is necessary that at-risk military personnel regularly and actively seek STI testing. Given the dearth of research on secondary prevention behaviours among military personnel, little is known about factors that may facilitate or hinder such behaviour. The importance of developing STI prevention interventions that are culturally-sensitive and tailored to the target population has been noted by several authors<sup>48</sup>. In order to guide the development of such interventions, however, additional research is desperately needed in the following areas: knowledge and perceptions of STI risks, their impacts on health, and ways they can be prevented; stigma and social norms associated

with STIs; and the accessibility of testing. Further research into the factors that influence the quality of patient-provider interactions among military personnel and their health care providers would help with identifying the best policies and programs for

improving the secondary prevention of STIs in the military context.

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