Screening for sexually transmitted infections: A review of literature to update family practitioners on who, what, where, when and how?

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Screening for sexually transmitted infections: A review of literature to update family practitioners on who, what, where, when and how?

Sexually transmitted infections (STIs) continue to be a public health concern in the United States with approximately 19 million new infections each year (Office of Disease Prevention and Health Promotion, United States Department of Health and Human Services [HHS], 2010). Almost half of these infections occur among adolescents and young adults aged 15 to 24 years (Centers for Disease Control and Prevention [CDC], 2010). Reducing the proportion of adolescents and young adults with chlamydia, and reducing the rates of gonorrhea among 15 to 44 year olds, are listed as reproductive health-related objectives in the Reproductive Health and Healthy People 2020 campaign (HHS, 2010). Local health departments have played an integral part in the screening and treatment of STIs (Paschal, Oler-Manske, & Hsiao, 2010) but relying on these already burdened state and federally funded programs to significantly reduce STIs in the U.S. is unrealistic (Jenkins & Kruse, 2010). In both urban and rural counties, family practice providers successfully demonstrated their value in the prevention and management of STIs – a health benefit now covered by many managed care insurance plans. In some areas however, chlamydia screening rates in physician offices remain as low as 37% (Jenkins & Kruse, 2010). In order to achieve consistency in STI screening, address at-risk groups with the highest benefit potential, and reach the objectives of the Reproductive Health and Healthy People 2020 campaign, it is vital to strengthen primary care providers’ capacity to provide optimal sexual health management services.

**Purpose Statement**

The purpose of this practice initiative is to provide primary care providers, especially those working in family practice settings, with a comprehensive review of literature to assimilate
current knowledge, evidence and recommendations regarding effective and appropriate screening for the two most common STIs – Chlamydia trachomatis and Neisseria gonorrhoeae. Aligned with the objectives for STIs listed in the Reproductive Health and Healthy People 2020 campaign (HHS, 2010) this effort will focus on sexually active male and female clients aged 15 to 44 years of age, bearing in mind that the potential benefit of this knowledge may have a much wider impact than this limited scope suggests.

**Significance of the Problem**

Approximately 19 million new STIs occur annually and cost the U.S. health care system an estimated $15.9 billion (HHS, 2010). The two most commonly reported STIs in the U.S., Chlamydia trachomatis (CT) and Neisseria gonorrhoea (NG), respectively accounts for around 1.2 million to 2.8 million (CT) and 300,000 to 700,000 (NG) reported infections annually (CDC, 2011; Leone, 2011; Swygard, Sena, & Cohen, 2012). Cases of chlamydia and gonorrhea represent only a portion of the actual magnitude of the problem. Likewise, its financial burden reflects only part of its strain on our society. Infection with CT and NG increase the risk of acquiring another STI and cause a seven-fold increase in the risk of contracting human immunodeficiency virus (HIV) through sexual contact (Alexander, LaRosa, Bader, Garfield, & Alexander, 2010; Peate, 2005). Persons already infected with HIV, when co-infected with an STI, also become more infectious – thereby increasing the likelihood of infecting a sexual contact with HIV as well as the coexisting STI (Alexander et al., 2010; Meyers et al., 2007; Peate, 2005).

In women, 75% to 85% of chlamydial infections are asymptomatic and left untreated, often results in cervicitis and urethritis (McPhee, Papadakis, & Rabow, 2011). In as many as forty percent of cases, it may progress to pelvic inflammatory disease (PID) with sequelae that
include, but are not limited to, infertility, chronic pain and adverse pregnancy outcomes (Anthonisz, 2009). In men, where chlamydia may also remain asymptomatic, untreated infection may cause non-gonococcal urethritis and acute epididymitis, which may result in urethral strictures and in rare cases, Reiter Syndrome (Scholes, Heidrich, Yarbro, Lindenbaum, & Marrazzo, 2007). In pregnancy, CT is associated with miscarriage, preterm labor, and premature rupture of membranes as well as low birth weight, increased infant mortality, neonatal infections and postpartum endometritis (Meyers et al., 2007).

Gonorrhea often occurs in conjunction with CT. In men, characterized by a purulent urethral discharge, up to 25% of those affected may remain asymptomatic (Leone, 2011). Left untreated it can cause epididymitis causing a painful testicular infection and eventual infertility (Green & Bailey, 2008). In women, similar to CT, it remains asymptomatic in as many as 80% to 85% of cases (Green & Bailey, 2008), and in the absence of effective treatment it may progress to salpingitis, disseminated gonococcal infection or perihepatitis. Like CT, it is a major cause of chronic pelvic pain, PID and tubal infertility (Green & Bailey, 2008). Infants born to mothers infected with gonorrhea may develop ophthalmia neonatorum, which may result in blindness (CDC, 2010).

Considering the complications of undiagnosed and recurring infections, the importance of appropriate screening is demonstrated through the benefits of early diagnosis and timely treatment. The fiscal cost of recommended screening and treatment of uncomplicated infections equals a fraction of the cost of its potential complications (USPSTF, 2007). Less obvious but equally significant is the social and psychological cost of STI-associated complications.

Health care providers find effective STI screening significant in terms of quality clinical practice and the improvement of patient outcomes. Organizations such as the National
Committee for Quality Assurance (NCQA) assess the quality of health care in the United States through health care performance measurement and especially at the physician-level, these measures are being introduced and adopted at an accelerating pace (National Committee for Quality Assurance website, 2011). Primary care providers in particular, find it of growing importance to demonstrate a commitment to address public health issues ranging from diabetes, asthma and heart disease to smoking cessation and the overuse of antibiotics to increasing effective screening for treatable STIs. Impending health care reform is increasingly shifting the delivery of STI diagnosis and treatment services, traditionally a domain of publicly funded health services, into the private sector (Owusu-Edusei & Doshi, 2011). Recent reports reflect that only 15% to 35% of all cases of NG and 5% to 15% of CT cases were diagnosed in public STI and family planning clinics – the remainder of the diagnoses occurring in hospitals and by private primary care providers (Owusu-Edusei & Doshi, 2011).

In the rapidly changing healthcare environment, the profession of nursing can validate the role of advanced practice registered nurses, by demonstrating a clear commitment to improved patient outcomes. Through their unique relationships with clients, nurse practitioners, especially those in primary care roles, are prime candidates to personify health care professionals’ commitment to destigmatize STI screening and increase public awareness of this lingering public health challenge.

The significance of conducting a comprehensive review of literature regarding STI screening and management approaches in adolescents and young adults lies in its contribution to the knowledge base of nursing. An amalgamation of current evidence may lay the foundation of practical evidence-based practice changes when nurse practitioners have a better understanding of how evidence-based recommendations translate into real-life practice suggestions. It may also
identify any gaps or inconsistencies in the body of evidence thus identifying areas where continued research or a renewed focus on a well-known issue may be needed. It may also indicate the need to replicate research findings to strengthen and corroborate existing evidence.

**Project Objectives**

In order to provide primary care providers with a useful assimilation of current knowledge, evidence and recommendations regarding effective and appropriate STI screening, this comprehensive review of literature will focus on the following objectives:

a. To provide a review of information regarding at-risk populations and variables that would increase an individual’s risk to contract an STI.

b. To provide a synthesis of current screening recommendations.

c. To provide information regarding current screening test options and factors which determine the choice of test.

d. To provide information regarding the existing and emerging venues and opportunities to suggest, recommend or conduct STI screening.

e. To provide a review of information, practical suggestions and useful tools to aide in the approach of patients regarding STI screening and sexual health issues.

f. To prepare and submit a manuscript for journal publication with the intent to contribute to the knowledge base for sexual and reproductive health interventions and aide in the advancement of holistic care approaches.

**Background of the Problem**

National chlamydia screening recommendations have been in place for almost two decades (CDC, 2011) yet in 2009, despite clear recommendations, less than half of all sexually active young women received an annual CT screening test (Braun & Provost, 2010). Agencies such as
the United States Preventive Services Task Force (USPSTF) and the Centers for Disease Control and Prevention (CDC) provide evidence-based recommendations to guide the prevention, detection and management of STIs and associated complications. By itself, educational campaigns expected to increase providers’ awareness of prevalence patterns, preventable sequelae, screening and management recommendations rendered insufficient results (CDC, 2009). A growing body of evidence supports the use of practical strategies and simple, structural interventions in conjunction with provider education to increase screening for CT, NG and other STIs (CDC, 2009). Numerous pharmacologic, research, academic, and non-profit organizations are also involved in continuously updating and expanding knowledge regarding the management of STIs in the United States as well as globally. Despite the intent to increase understanding and efficacy of the management of STIs, each revision of management recommendations and guidelines, challenges health care providers to update their knowledge and understanding of practice expectations. Increasing practice demands, whether related to patient care, administrative duties, or staying current on recommendations for an infinite amount of disease conditions, limit the frequency with which primary care providers are able to update themselves with the most current trends and recommendations.

A wide range of factors that either hinder or facilitate screening and management efforts also influences appropriate screening, early diagnosis and effective treatment of CT and NG (and other STIs). Barriers to effective STI screening are classified as either provider related or patient related.

Provider related barriers

Jenkins and Kruse (2010) identified the most significant provider related barriers as:

a. A poor understanding of the extent of the infections,
b. A lack of awareness of the most current screening guidelines,

c. An under-appreciation of the role of primary care providers in STI prevention,

d. A general misunderstanding that state and federally funded local health departments and
   STI clinics will carry the burden of STI screening,

e. Patient-clinician relationships and interactions that do not foster open discussion of
   sexual health issues and sexual high-risk behavior,

f. Insufficient time during busy practice schedules to initiate a discussion regarding the
   potential need for STI screening – especially in asymptomatic cases where clinical
   findings of STIs are absent,

g. The lack of reimbursement for STI screening when third party payers bundle
   reimbursement for gynecological services or when data capture for STI screening are not
   consistently recorded,

h. Insufficient health information exchange among health care professionals where
   technology and/or adequate data interfaces are lacking causing a gap in point-of-service
   information that would enhance screening compliance,

i. A significant lack of integration between public health and physician practices
   demonstrating the need for clinicians to increase their focus on primary and preventive
   care.

j. Physician discomfort in recommending STI screening during non-gynecological exams
   (opportunistic screening), was identified as a provider related barrier in a study conducted
   by McClure et al. (2006).

**Patient related barriers**

Patient related barriers to Chlamydia screening were identified as:
a. Insufficient knowledge regarding the asymptomatic nature, the high prevalence and the potential complications of CT and NG when left undiagnosed and untreated (Bilardi et al., 2010; CDC, 2009),

b. The fear of being regarded as a person with questionable morality due to the stigmatization of Chlamydia testing and/or being diagnosed with Chlamydia or other STIs (Balfe, Brugha, O’Donovan, O’Connell, & Vaughan, 2010),

c. Patients’ fear of a lack of confidentiality and anonymity during screening, diagnosis and treatment interventions (National Committee for Quality Assurance [NCQA], 2008),

d. Lack of knowledge of Chlamydia screening guidelines and being unaware that Chlamydia screening can be performed without a pelvic examination (CDC, 2009),

e. Incomplete access to health care where a significant number of clients are either uninsured or lack insurance benefits that would cover preventive care services (Jenkins & Kruse, 2010),

f. Insufficient access to screening services where, despite attending physician practices, patients are not offered the opportunity to receive screening tests (Anthonisz, 2009),

g. Cultural and language differences where patients are unsure of the sincerity and cultural sensitivity of their primary care provider (Anthonisz, 2009),

h. Previous bad or embarrassing experiences which deter patients from returning for follow-up or re-screening visits (Anthonisz, 2009).

Addressing barriers to STI screening

Addressing patient and provider related barriers to optimize STI screening is an important part of focused quality improvement efforts. However, without practical suggestions on how to facilitate factors that support screening, the best intentions and efforts may never achieve their
full potential. According to the NCQA (2008), activities that focus on changing practitioner behavior and beliefs include:

a. Clarifying clinical practice guidelines,

b. Educating practitioners regarding the importance of STI screening for their clients,

c. Providing tools to remind practitioners to include STI screening in routine examinations,

d. Assisting practitioners enhance their skills and comfort in talking to clients regarding STI screening,

e. Collecting and recording data to provide practitioners with feedback regarding the impact of their changed practice efforts.

Supported by a growing collection of evidence, it is therefore of vital importance to combine provider education with practical suggestions regarding strategies and structural interventions to facilitate the improvement of STI care.

**Theoretical Framework**

A disconnect between evidence-based practice recommendations and the everyday clinical practice habits of health care providers have been documented by several authors (Godin, Belanger-Gravel, Eccles, & Grimshaw, 2008; Perkins et al., 2007). The value of a comprehensive review of literature manifests through the amalgamation of knowledge in a certain field and addressing how this knowledge, utilized by health care providers, can be implemented in routine clinical practice. Several theoretical models and theories of behavioral science such as the health belief model (HBM), the theory of planned behavior (TPB), the theory of reasoned action (TRA), the health promotion model, and the theory of interpersonal behavior, address the phenomena of health-related behavior. A wealth of knowledge exists regarding the utilization of these behavioral science theories in the examination, prediction and modification of
patient health behavior (Perkins et al., 2007; Rosenstock, Strecher, & Becker, 1988). In sharp contrast however, is the relatively limited understanding of how these theories contribute to understanding, predicting and changing clinician behaviors (Eccles et al., 2006). In a climate supportive of the implementation of evidence-based practice guidelines, recognition of the discrepancies between practice recommendations and provider actions, resulted in an increased focus on strategies to understand and predict clinician behavior and to facilitate required behavioral change (Eccles et al., 2006; Perkins et al., 2007).

Two related behavioral science theories, the theory of reasoned action (TRA) and the theory of planned behavior (TPB), provide a conceptual framework through which the output of this project may be incorporated into a strategy to effect change in clinician behavior.

**The theory of reasoned action and the theory of planned behavior**

The theory of reasoned action (Ajzen & Fishbein, 1980) and the theory of planned behavior (Ajzen, 1985) both propose that many individual behaviors can be predicted through the consideration of the individual’s intentions to perform certain behaviors. In both theories, subjective norms and the expected value of the behavioral performance are considered the two major influences on the strength of a behavioral intention (Perkins et al., 2007). As an extension of the TRA, the TPB adds self-efficacy belief as a third manipulator of the strength of behavioral intentions. “At its core, the TPB is concerned with the prediction of intentions” (Ajzen, 2011, p. 1115), and as such it becomes evident that the strength of behavioral intentions directly relates to the actual occurrence of behavioral outcomes (Ajzen, 2011; Perkins et al., 2007). The primary determinants of behavioral intentions can be clarified as follows:

**Attitude towards the behavior.** The attitude toward a behavior refers to the individual’s beliefs and perceptions of the consequences of certain behaviors. It is a reflection of the
expected value of the behavior and a uniquely perceived association between a behavior and an expected outcome (Perkins et al., 2007).

**Subjective norms.** Subjective norms refer to the individual’s normative beliefs regarding a behavior and the individual’s level of compliance with his/her normative beliefs. It consists of what the individual perceives as important to his/her referents or what the perceived behavioral expectations of significant others are (Perkins et al., 2007).

**Perceived behavioral control.** Perceived behavioral control refers to the individual’s perception that he/she can successfully perform a behavior and overcome any obstacles that may challenge implementation of the behavior (Perkins et al., 2007).

Considering the relationships among the constructs of the TPB (illustrated in Appendix B, Figure 1), it should be noted that differences exist in the relative importance of the constructs and how it influences behavioral intensions in different individuals. For example, some individuals may experience a very strong relationship between one of the determinants and behavioral intensions while others experience equally strong influences from all three determinants.

**Application of the theory of planned behavior in screening for STIs**

The TPB can be utilized to reflect on providers’ behavior in terms of STI screening. The first determinant of behavioral intention, attitude toward the behavior, becomes evident in the PCP’s perceptions about the advantages and disadvantages of the particular behavior (assessing sexual health risk and screening for STIs). PCPs may not be adhering to recommended screening guidelines because they may not be aware of the continued magnitude of the problem or they may not realize the potential positive impact of appropriate screening behavior. Providing updated information regarding the epidemiology, cost of STIs, the associated consequences of undiagnosed and untreated STIs, and the importance of private sector PCP participation in
dealing with a public health concern, may increase awareness of the impact of STIs. It may also contribute to the perception that appropriate behavior (adhering to evidence-based screening recommendations) may have definite, measurable, positive consequences.

The second determinant, subjective norms, becomes evident when PCPs are aware of the norms and expectations of significant referents and have a desire to comply with these norms. When the provider is acutely aware of his/her clients’ normative beliefs (which may include that assessment of sexual health risks imply suspicion of questionable moral standards) and he/she has a strong desire not to offend or embarrass his clients, behavioral intentions may be negatively influenced. Conversely, informing the PCP of the subjective norms accepted by his professional colleagues (that strong adherence to evidence-base practice guidelines are highly desirable) may positively influence and strengthen behavioral intentions – especially if the PCP also has a strong desire to comply with those norms. Updating PCPs knowledge of what their professional community, their patient population, policy-makers and quality assurance entities expect of them, and increasing their desire to comply with these normative expectations, enable PCPs to increase their behavioral intentions and subsequently change their behavior.

The third determinant, perceived behavioral control, refers to the PCPs perception that he/she is able to effectively and successfully execute a certain behavior for which behavioral intent exist. This belief of self-efficacy is addressed through equipping PCPs with practical knowledge regarding screening modalities, tests, when to choose what, and how to conduct a risk-assessment interview with a patient. If PCPs believe they are able to conduct complete sexual risk-assessment interviews or conversations with clients, they will be more likely do so and do so more effectively. Identifying and addressing specific barriers that may affect behavior, norms and control becomes an integral part of any measure aiming to influence provider behavior.
In a prospective analysis using the TRA and TPB to predict physician behavior, Millstein (1996) found that providers’ beliefs about the degree of control they had over educating adolescent clients were good predictors of both behavioral intention and behavior itself. Results indicated that those who believed they had control over educating patients, who were confident that they could perform the behavior, and who perceived that the behavior would be less difficult to perform, had greater intentions to educate but also educated at higher rates (Millstein, 1996). Additionally, physicians who understood the subjective norms of their peers and the recommended standards of care, had stronger intentions to deliver appropriate care and were more likely to actually exhibit the behavior (Millstein, 1996).

Contemplating the TPB, the usefulness of a comprehensive review of literature is demonstrated in its’ potential to contribute to changes in provider behavior secondary to the increase of provider awareness regarding the expected standards of care, the subjective norms of their clients and peers, and its potential to increase self-efficacy through skill and knowledge development.