

# Sexual Health in Men With Traumatic Spinal Cord Injuries: A Review and Recommendations for Primary Health-Care Providers

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## Abstract

Sexual health has been well established as a salient priority for men following traumatic spinal cord injury; yet, it continues to be under-addressed by health-care providers in both inpatient and community settings. Given that most men with traumatic spinal cord injuries will be followed by community-based primary health-care providers, including family physicians and nurse practitioners, for their long-term health-care needs, these clinicians are well positioned to address ongoing sexual health issues with this population. A scoping review of literature published between 2007 and 2017 inclusive was undertaken to identify what is known about the sexual health of men with spinal cord injuries. Twenty articles met the inclusion criteria. The findings are presented in four themes: (a) patterns and diversity of sexual health concerns; (b) sexual health recovery as an ongoing priority; (c) clinical barriers to addressing sexual health concerns, and (d) recommended interventions and strategies for primary health-care providers. The findings indicate that physiological changes as well as psychological and social factors influence men's sexual function following spinal cord injury, and that sexual health recovery is an enduring rehabilitation priority. Several barriers including lack of sexual rehabilitation services and consensus around clinician roles, and societal stigmas related to disability and sexuality impede treatment. Attention to sexual health recovery has mainly focused on formal rehabilitation settings; however, many evidence-based clinical strategies and resources are relevant to and adaptable for primary care providers caring for these men in the community.

## Keywords

sexual health, sexual dysfunction, spinal cord injury

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The overwhelming majority of traumatic spinal cord injuries occur in young males under age 40, typically as a consequence of motor vehicle accidents, falls, sports-related injuries, or violence (Devivo, 2012; Hasler et al., 2012; Ibrahim, Lynne, & Brackett, 2016; Singh, Tetreault, Kalsi-Ryan, Nouri & Fehlings, 2014). It is estimated that there are approximately 86,000 individuals currently living with traumatic spinal cord injuries in Canada, with 4,300 new cases reported each year. Eighty percent of those affected are men, and the most common age of injury is between 20 and 29 years (Rick Hansen Institute, 2013). Similar patterns are observed in the United States (Devivo, 2012). Spinal cord injuries are life-altering experiences, with far reaching physical, emotional, psychological, and social consequences (Anderson, Borisoff,

Johnson, Stiens, & Elliott, 2007; Myburgh, Fourie, & van Niekerk, 2010; Simpson, Eng, Hsieh, Wolfe, & Spinal Cord Injury Rehabilitation Evidence Research Team, 2012). Given that young men who are typically at the pinnacle of their reproductive lives comprise the vast majority of individuals who suffer traumatic spinal cord injuries, sexuality and fertility are frequently identified as

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salient concerns (Courtois et al., 2012; Ibrahim et al., 2016; Sinha, Elliott, Ibrahim, Lynne, & Brackett, 2017).

Though sexual health is key to men's quality of life after spinal cord injury, it continues to be under-addressed by health-care providers in both inpatient and community-based settings (Anderson et al., 2007; Elliott, Hocaloski, & Carlson, 2017; Post & van Leeuwen, 2012; Simpson et al., 2012). There exists a growing international body of literature stressing the importance of addressing sexual health, including fertility issues, for men with traumatic spinal cord injuries within the formal rehabilitation setting. Despite this evidence, the ongoing role of primary care providers, including family physicians and nurse practitioners, in regard to these concerns, has been largely overlooked and underexplored. Given that most men with traumatic spinal cord injuries are eventually followed by primary care providers in the community for their long-term health-care needs, awareness of and attention to sexual health should be integrated into routine care (Simpson et al., 2012). The current scoping review article summarizes evidence from the recent literature focused on sexual health in men with traumatic spinal cord injuries. Also described are the main reasons why sexual health is currently under-addressed for these individuals. Based on the review findings, evidence-based strategies for caring for men with traumatic spinal cord injuries are summarized and discussed to guide the work of primary health-care providers.

## Methods

A scoping review is an effective approach to broadly examining literature on a specific topic to rapidly detect emerging trends, summarize research findings, and identify gaps in the evidence (Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010). The approach was particularly helpful in mapping the diverse emergent knowledge about men's sexual health post spinal cord injury, a relatively small body of literature not yet amenable to a more precise systematic review (Khalil et al., 2016; Pham et al., 2014). Used to collect preliminary evidence to inform clinical practice, guide policy development, and identify future research directions, the current scoping review was conducted according to the five stage methodology proposed by Arksey and O'Malley (2005): (a) identify the research question, (b) identify relevant studies, (c) select studies for inclusion, (d) chart the data, and (e) summarize and report the results.

The literature search was conducted using the electronic databases MedLine and CINAHL with full text databases. A summary of the search strategy has been included below:

*Keywords used: (MM field code: MedLine Exact subject heading; DE field code: CINAHL subject heading)*

- Sex\* N2 (recover\* OR Issue\* OR problem\* OR rehab\* OR manage\* OR health\*)
- Spin\* N2 injur\*
- MM "Sexuality" OR MM "Sexual Dysfunction, Physiological" OR MM "Sexual Dysfunctions, Psychological"
- MM "Spinal Cord Injuries"

The search strategy produced a total of 931 articles. The titles and abstracts were reviewed for relevance according to the following inclusion criteria: literature published from 2007 to 2017 inclusive; English language; and articles focused specifically on men (or a majority population of men) with spinal cord injuries within the context of sexual health. Articles were excluded that focused solely on prevalence, risk factors, or rehabilitation issues in general for spinal cord injuries. Twenty articles met the inclusion criteria and comprised the data for this scoping review (see Table 1). The reference lists of these articles were also reviewed to identify additional publications for inclusion; however, this strategy was useful only for a contextual understanding of the topic, and the identification of the major clinical and research contributors. The 20 articles were reviewed in detail by the first author, charted, and the following data extracted: study methodology; study location; sample details; and main findings. The contents of the articles were read and organized to four interconnected themes.

## Results

The majority of the literature included in the current scope comprised review articles ( $n = 8$ , 40%) and empirical quantitative studies ( $n = 7$ , 35%). Also included were 3 articles focused on program evaluation and/or practice and evidence-based recommendations (Consortium for Spinal Cord Medicine, 2010; Elliott et al., 2017; Pieters, Kedde, & Bender, 2018), a qualitative case report (Previnaire et al., 2017), and a mixed methods study (New, Seddon, Redpath, Currie, & Warren, 2016). Four themes were identified from the literature review and form the basis of the current article: (a) patterns and diversity of sexual health concerns; (b) sexual health recovery as an ongoing priority; (c) clinical barriers to addressing sexual health concerns, and (d) recommended interventions and strategies for health-care providers.

### *Patterns and Diversity of Sexual Health Concerns*

Following traumatic spinal cord injury, most men experience severe impairments in their sexual health and reproductive functioning due to erectile and/or ejaculatory dysfunction, and semen abnormalities (Čehić et al., 2016;

**Table 1.** Scoping Review Articles Addressing Sexual Health in Men With Traumatic Spinal Cord Injuries.

Author(s)/Year	Methodology, study location, sample details	Results	Theme category
Anderson, Borisoff, Johnson, Stiens, & Elliott (2007)	Cross-sectional web-based survey; males and females living with spinal cord injuries, <i>N</i> = 286, 69.6% males United States/Canada	More than 80% of participants felt that their spinal cord injury altered their sexual sense of self, and that improvements in their sexual functioning would improve their quality of life.	Clinical barriers
Barbonetti, Cavallo, Felzani, Francavilla, & Francavilla (2011)	Cross-sectional study; men with neurologically stable traumatic spinal cord injuries admitted to a rehabilitation program, <i>N</i> = 40; Italy	Evaluated psychological distress in men with traumatic spinal cord injuries with or without erectile dysfunction. Erectile dysfunction was identified as the main determinant of psychological distress in men with traumatic spinal cord injury.	Patterns of sexual health concerns
Burns, Hough, Boyd, & Hill (2010)	Cross-sectional web-based survey; <i>N</i> = 116 men with spinal cord injuries United States	Men's adherence to masculine norms influence their adjustment to spinal cord injuries. Higher rates of depression were observed in men with spinal cord injuries who adhered to masculine norms fostering excessive independence that limits access to emotional and functional supports.	Patterns of sexual health concerns
Burns, Mahalik, Hough, & Greenwell (2008)	Review article United States	Discussion of how men's adherence to gender norms around sexual potency may influence their post-injury mental health. Discussion of gender-sensitive interventions and future clinical research.	Patterns of sexual health concerns Recommended interventions
Čehić et al. (2016)	Review article Discussion focused on fertility issues in men with spinal cord injury Croatia	The majority of men with spinal cord injuries experience impairments in sexual and reproductive functions due to erectile/ejaculatory dysfunction and semen abnormalities. Favorable pregnancy rates have been achieved with the use of assisted methods for semen retrieval and reproductive technologies.	Patterns of sexual health concerns Sexual health recovery as ongoing priority
Cobo Cuenca, Sampietro-Crespo, Virseda-Chamorro, & Martin-Espinosa (2015)	Cross-sectional, case control study <i>N</i> = 165 men with sexual dysfunction, 85 with spinal cord injury, 80 without injury Assessed types of sexual dysfunction, quality of life, depression, anxiety, and levels of self-esteem in men with sexual dysfunction, with and without spinal cord injury Spain	Men with spinal cord injuries reported less satisfaction with sexuality and employment status. Ejaculation disorders most common sexuality issue reported.	Patterns of sexual health concerns
Consortium for Spinal Cord Medicine (2010)	Clinical practice guidelines for health-care professionals Based on a systematic review of literature Published 1995–2007 (145 articles) on issues related to sexuality and reproductive health in individuals with spinal cord injuries. United States	Evidence-based recommendations for health-care professionals to address sexuality and reproductive health in adults with spinal cord injuries. Guidelines are rated based on strength of evidence from the systematic review.	Clinical Barriers Recommended interventions

(continued)

**Table 1. (continued)**

Author(s)/Year	Methodology, study location, sample details	Results	Theme category
Eisenberg, Andreski, & Mona (2015)	Review article Discussion of sexuality and physical disability within health care United States	Evidence-based strategies for health-care providers working with individuals with disabilities to better address their sexual health needs.	Patterns in sexual health concerns Clinical barriers Recommended interventions
Elliott, Hocaloski, & Carlson (2017)	Discussion article proposing a multidisciplinary approach to sexual and fertility rehabilitation for individuals with spinal cord injuries Canada	Description and argument for the evidence-based, multidisciplinary Sexual Rehabilitation Framework	Sexual health recovery as ongoing priority Clinical barriers Recommended interventions
Hess & Hough (2012)	Review article Discusses the impact of spinal cord injury on sexuality among males and females United States	Description of sexual dysfunction issues commonly experienced by individuals with spinal cord injuries, and a discussion of possible interventions.	Patterns in sexual health concerns Sexual health recovery as ongoing priority Recommended interventions
Ibrahim, Lynne, & Brackett (2016)	Review article Focus on male fertility following spinal cord injury United States	Erectile dysfunction, ejaculatory dysfunction, and abnormal semen quality are major contributors to infertility in men with spinal cord injury. Discussion of evidence-based treatment options for infertility in this population.	Patterns in sexual health concerns Sexual health recovery as ongoing priority
Lombardi, Macchiarella, Cecconi, Aito, & Del Popolo (2008)	Cross-sectional study N = 99 males divided into two groups, under and over 60 years. Examined the sexual health concerns of male patients with spinal cord injury over 50 years of age with lesions of at least 20 years Italy	Concerns around sexual health continue to be important to males over 50 years old with longstanding spinal cord injuries, although specific interests and needs may vary compared to younger men. Most men +60 years declined pharmacologic treatments to achieve intercourse.	Patterns in sexual health concerns Sexual health recovery as ongoing priority
New, Seddon, Redpath, Currie, & Warren (2016)	Mixed methods study using survey and semistructured interviews N = 154 males and females, 72% male Australia	Individuals with spinal cord injury reported low satisfaction with sexuality education during rehabilitation.	Clinical barriers Recommended interventions
Pieters, Kedde, & Bender (2018)	Program evaluation using pre-test post-test design to examine the impact of a specialized training program for rehabilitation teams in sexual health care; N = 74 staff members Netherlands	Providing rehabilitation teams with a formal training program in sexual health care helped to integrate sexual health in the overall care for rehabilitation patients.	Clinical barriers Recommended interventions
Post & van Leeuwen (2012)	Narrative literature review on life satisfaction, subjective well-being, and mental health outcomes in individuals with spinal cord injuries. Netherlands	Individuals with spinal cord injuries experience higher levels of distress and lower levels of life satisfaction compared with the general population.	Sexual health recovery as ongoing priority
Previnaire et al. (2017)	Qualitative, case reports N = 4, 3 males Describes the medical impact of spinal cord injury on sexual responses and course of treatment France/United States/Canada	Neurological examination combined with reflex testing allows for prediction of sexual responses after spinal cord injury.	Patterns in sexual health concerns

(continued)

Table 1. (continued)

Author(s)/Year	Methodology, study location, sample details	Results	Theme category
Simpson et al. (2012)	Systematic review, <i>N</i> = 24 studies Focus on studies that directly surveyed people with spinal cord injuries to identify their health/life priorities. Men consistently represented the majority of study populations (50%–88%) Canada	Restoration of sexual function was consistently identified as a top priority (within the top 25%) for individuals with spinal cord injuries.	Sexual health recovery as ongoing priority
Sinha, Elliott, Ibrahim, Lynne & Brackett (2017)	Review article Discussion of issues that health-care providers should consider when managing the reproductive health of men with spinal cord injury United States/Canada	Description of sexual dysfunction commonly seen in men with spinal cord injury, and evidence-based interventions and recommendations based on authors' decades of experience.	Patterns in sexual health concerns
Steadman & Hubscher (2016)	Review article Discussion of sexual function after spinal cord injury in both males and females United States	Discussion of patterns of sexual function following spinal cord injury. Provided evidence-based suggestions around appropriate assessment and treatment.	Patterns in sexual health concerns Sexual health recovery as ongoing priority
Van der Meer et al. (2017)	Prospective multicenter cohort study based on self-report questionnaires <i>N</i> = 110, 69% male Examined salient health problems reported by individuals with spinal cord injuries at 1 and 5 years post discharge from inpatient rehabilitation; Netherlands	Sexuality was one of the most frequently identified and ongoing concerns of individuals with spinal cord injuries at 1 and 5 years post discharge from first inpatient rehabilitation.	Sexual health recovery as ongoing priority Recommended interventions

Sinha et al., 2017). Many men report decreased libido, anorgasmia, and in some cases dyspareunia (Burns, Hough, Boyd, & Hill, 2010; Burns, Mahalik, Hough, & Greenwell, 2008; Cobo Cuenca, Sampietro-Crespo, Virseda-Chamorro, & Martin-Espinosa, 2015; Hess & Hough, 2012). The degree of individual sexual dysfunction depends on the level and severity of the spinal cord injury, and the amount of time that has passed since the injury itself (Cobo Cuenca et al., 2015; Hess & Hough, 2012; Previnaire et al., 2017). The T11–12 sympathetic, the S2–4 parasympathetic, and the somatic centers have been identified as the three spinal segments that are particularly important for sexual function. Disruptions to these pathways result in predictable alterations in the ability of men to achieve erection, ejaculation, and orgasm (Previnaire et al., 2017). Research has demonstrated that up to 95% of men with spinal cord injuries experience persistent ejaculatory problems, such as anejaculation or retrograde ejaculation, but almost 80% regain some degree of erectile function by 2 years after injury (Hess & Hough, 2012). Although the majority of men with traumatic spinal cord injuries maintain normal

sperm concentrations, they often have injury-related low sperm motility and viability, which significantly contribute to very high rates of infertility in this population (Čehić et al., 2016; Sinha et al., 2017). It has been well established that these sexual concerns manifest as varying degrees of psychological distress and adjustment difficulties in men with traumatic spinal cord injuries (Barbonetti, Cavallo, Felzani, Francavilla, & Francavilla, 2011).

There are pharmacological and nonpharmacological treatment options for men with traumatic spinal cord injuries depending on the type of sexual dysfunction experienced. For most men with spinal cord injuries, the basic mechanisms for erection are preserved, including normal vasculature and an intact S2–4 reflex arc (Čehić et al., 2016; Sinha et al., 2017; Steadman & Hubscher, 2016). They are often able to have reflex erections, but not psychogenic erections (Barbonetti et al., 2011; Sinha et al., 2017). These men typically respond well to pharmacological treatments used for the management of erectile dysfunction in men without spinal cord injuries, namely oral phosphodiesterase-5 inhibitors (PDE-5

**Table 2.** Medical Interventions for Common Sexual Health Concerns in Men With Traumatic Spinal Cord Injuries.

Physiological dysfunction	Medical option
Erectile issues	PDE-5 inhibitors (i.e., sildenafil, vardenafil, tadalafil) Specialized vacuum devices Intracavernosal injections Surgical penile prostheses
Abnormal semen profile Inability to ejaculate Difficulty with conception	Specialty techniques to obtain sperm; PVS or EEJ Surgical sperm retrieval Intravaginal insemination Intrauterine insemination <i>In vitro</i> fertilization

Note. PVS = penile vibratory stimulation; EEJ = lectroejaculation.

inhibitors) such as sildenafil, vardenafil, and tadalafil (Čehić et al., 2016; Ibrahim et al., 2016). Approximately 70% of men with spinal cord injuries respond to PDE-5 inhibitors, and most experts recommend that all men with spinal cord injuries be offered a trial of these agents, regardless of their level of injury (Ibrahim et al., 2016). In men who do not get an adequate response with PDE-5 inhibitors, potential options include the use of specialized vacuum devices, intracavernosal injections, or surgical penile prostheses (Čehić et al., 2016; Sinha et al., 2017).

The vast majority of men with traumatic spinal cord injuries are unable to ejaculate during sexual intercourse (Steadman & Hubscher, 2016). In addition, they frequently have abnormal semen profiles (Čehić et al., 2016). To procure sperm for artificial insemination, specialty techniques such as penile vibratory stimulation (PVS) or electroejaculation (EEJ) have been proven to be extremely effective (Ibrahim et al., 2016; Sinha et al., 2017). Patients undergoing these procedures must do so in specialty clinics where they can be monitored and treated for any potential complications, such as autonomic dysreflexia (Čehić et al., 2016; Ibrahim et al., 2016). In cases where PVS and EEJ are ineffective or not tolerated, surgical sperm retrieval is considered a last resort (Čehić et al., 2016; Steadman & Hubscher, 2016). Despite impairments to semen quality in men with spinal cord injuries, modern advances in assisted reproductive technologies, including intravaginal insemination, intrauterine insemination, and *in vitro* fertilization have resulted in favorable pregnancy rates (Čehić et al., 2016; Sinha et al., 2017) (See Table 2).

Beyond the well-known physiological changes that cause sexual dysfunction in men with traumatic spinal cord injuries, there are several other factors which have been reported to have a potential impact on their sexual response and function. These factors include individual characteristics, such as post-injury self-esteem and body image issues, relationship status, previous sexual attitudes and experiences, and openness to sexual experimentation (Čehić et al., 2016; Eisenberg, Andreski, & Mona, 2015;

Hess & Hough, 2012; Lombardi, Macchiarella, Cecconi, Aito, & Del Popolo, 2008). There is some evidence to demonstrate that men's adherence to traditional masculine norms may affect their adjustment to changes in their sexual functioning following spinal cord injury (Burns et al., 2010). For example, adherence to masculine scripts that stress the salience of men's sexual potency and prowess may exacerbate feelings of depression, loss, insecurity, and inadequacy, which may hinder an individual's ability to positively adjust to sexuality changes (Burns et al., 2010; Burns et al., 2008). Similarly, research has demonstrated that adherence to masculine norms that promote excessive self-reliance or independence increases men's negative perceptions of their post-spinal cord injury physical limitations, impedes their willingness to engage with emotional and social supports, and results in higher rates of depression (Burns et al., 2010). In order to address these concerns, interventions, including sex education, counseling (both individual and couples counseling), cognitive behavioral therapy, sex therapy, and peer support are often beneficial (Consortium for Spinal Cord Medicine, 2010; Eisenberg et al., 2015; Post & van Leeuwen, 2012).

### Sexual Health Recovery as an Ongoing Priority

In the past two decades, advances in the field of rehabilitation and physical medicine have resulted in tremendous improvements in men's life expectancies and quality of life posttraumatic spinal cord injuries, including better prevention strategies for pressure sores and skin breakdown, more effective treatments for neuropathic pain and spasticity, as well as developments in technologies that optimize mobility (Čehić et al., 2016; Ibrahim et al., 2016; Lombardi et al., 2008). The benefits of these advancements are significant, but it is essential for health-care providers to recognize that there can be mismatches in what providers vs. patients triage as most important (Simpson et al., 2012). One example is sexual health, which has been consistently identified as a salient

component of quality of life and well-being for men with traumatic spinal cord injuries; yet it continues to be inadequately addressed by health-care providers in inpatient and community-based settings (Elliott et al., 2017; Hess & Hough, 2012; Post & van Leeuwen, 2012; Simpson et al., 2012; Steadman & Hubscher, 2016).

A systematic review by Simpson et al. (2012) examining 24 studies that directly surveyed individuals with spinal cord injuries about their health and life priorities reported that restoration of sexual function was consistently identified as a top priority. Most studies included in the Simpson review comprised a mix of male and female participants; however, men consistently represented the majority of study populations, ranging from 50% to 88%. Another study looking at the most salient health problems reported by individuals with spinal cord injuries at 1 and 5 years post discharge from first inpatient rehabilitation confirmed sexuality as one of the most frequently identified and ongoing concerns (Van der Meer et al., 2017). Anderson et al. (2007) surveyed 286 individuals with spinal cord injuries, approximately 70% of whom were male, and concluded that more than 80% of participants felt that their spinal cord injury had affected their sexual sense of self, and that improvements in their sexual function would significantly improve their quality of life. In addition, research has demonstrated that concerns around sexual health and functioning continue to be important to males over 50 years of age with longstanding spinal cord injuries of at least 20 years, although their specific interests and needs may vary compared to younger men (Lombardi et al., 2008).

The aforementioned research provides strong evidence that sexual health is a significant and ongoing priority for men with traumatic spinal cord injuries, which has major influences on their quality of life (Simpson et al., 2012). These findings lobby primary health-care providers to work assiduously to better address men's sexual health recovery in the short and long term.

### ***Clinical Barriers to Addressing Sexual Health Concerns***

In 2000, the World Health Organization identified sexual health as a fundamental right of all individuals. They defined sexual health as "a state of physical, emotional, mental, and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction, or infirmity" (WHO, 2018). For the past 30 years the American Occupational Therapy Association has identified sexuality as an activity of daily living, which inherently establishes it as an important priority in rehabilitation medicine (Elliott et al., 2017; Pieters et al., 2018). Evidence suggests there are several reasons implicated to explain why health-care providers under-address sexual health in men with traumatic spinal cord

injuries. One main reason is the lack of formal inpatient and community-based sexual rehabilitation services. There are numerous programs for bowel and bladder management following spinal cord injury; but, programs in the area of sexual health are generally lacking (Anderson et al., 2007; Consortium for Spinal Cord Medicine, 2010; Pieters et al., 2018). A few rehabilitation centers operate in North America with highly specialized sexual health rehabilitation services, such as GF Strong in Vancouver, Canada, but these programs tend to be located in large, urban areas, posing barriers for men residing in rural and remote communities. Such programs also tend to have high demand, often resulting in considerable wait lists. Although inpatient sexual rehabilitation services (when they exist) are highly beneficial, individuals with spinal cord injuries identify a widespread need for ongoing access to sexual rehabilitation services following discharge into the community (New et al., 2016).

There is little consensus around when, how, and who should be addressing concerns related to sexuality and fertility in men with spinal cord injuries (Consortium for Spinal Cord Medicine, 2010; Pieters et al., 2018). Research with health-care providers has established that they often perceive many barriers to discussing sexuality with their patients (Pieters et al., 2018). These barriers include perceived deficits in their knowledge and expertise, discomfort in asking about and addressing sexual concerns, lack of time and/or adequate reimbursement, and perception of expertise elsewhere (Elliott et al., 2017; New et al., 2016; Pieters et al., 2018). In addition, health-care professionals often wait for patients to mention concerns about sexuality (Pieters et al., 2018). Many patients feel embarrassed about bringing up the topic of sexuality, are unclear about which provider to approach with their questions, and/or feel uncertain about provider comfort with discussing sexual health (Elliott et al., 2017). Consequently, most men with traumatic spinal cord injuries expect that their health-care providers will initiate such discussions, and therefore mistakenly miss opportunities to initiate conversations about their sexuality (Pieters et al., 2018). There is ample evidence to suggest that societal and self-stigma fuel misperceptions that men with disabilities are asexual and/or undesirable, which contributes additional barriers to the provision of sexual health rehabilitation for men with traumatic spinal cord injuries (Eisenberg et al., 2015; New et al., 2016).

### ***Recommended Interventions and Strategies for Primary Health-Care Providers***

Sexual rehabilitation and fertility experts have called for the establishment of standardized multidisciplinary approaches to sexual health (Elliott et al., 2017; Hess & Hough, 2012; New et al., 2016; Pieters et al., 2018). Given the complex nature of sexual health, most experts

recommend a biopsychosocial approach to sexual health care, incorporating the expertise and perspectives of various disciplines, including physicians, occupational therapists, physiotherapists, psychologists, sexual therapists, nurses, social workers, and peer support workers (Consortium for Spinal Cord Medicine, 2010; Elliott et al., 2017; Pieters et al., 2018). It is thought that by distributing the responsibility for the initial management of sexual concerns across a multidisciplinary team in rehabilitation centers, the work is shared promoting holistic approaches (Elliott et al., 2017; Pieters et al., 2018). There is a knowledge gap related to the potential ongoing role and responsibilities of primary care providers, including family physicians and nurse practitioners, in addressing the sexual health concerns of men with traumatic spinal cord injuries in the community setting. Given that most men with traumatic spinal cord injuries in North America will be eventually followed by primary care providers in the community for their long-term health-care needs, these clinicians are well positioned to maintain ongoing dialog and support related to sexual health recovery post discharge from inpatient rehabilitation. Most men continue to express concerns about their sexuality in the years following traumatic spinal cord injury, which demonstrates that this is a prevailing health need highly relevant to primary care (Burns et al., 2008; Consortium for Spinal Cord Medicine, 2010; Van der Meer et al., 2017).

The majority of literature that exists around improving health-care providers' awareness of and attention to sexual health in men with traumatic spinal cord injuries has focused on the formal rehabilitation setting. Many of the proposed evidence-based strategies are applicable to and helpful for family physicians and nurse practitioners working with these patients in the community. For example, the P-LI-SS-IT model is a useful framework for clinicians to approach patients' sexual concerns and to decide when to refer (Consortium for Spinal Cord Medicine, 2010). It was originally created by Dr. Jack Annon in 1976, and it continues to be used by sexual health teams and practitioners (Eisenberg et al., 2015). The P-LI-SS-IT model represents four stages of increasing questioning and intervention related to sexual issues, including permission (P), limited information (LI), specific suggestions (SS), and intensive therapy (IT) (Eisenberg et al., 2015; New et al., 2016). As the level of intervention increases, the required knowledge, skill, and expertise required of the clinician also increases (Consortium for Spinal Cord Medicine, 2010; Eisenberg et al., 2015). Permission is the first level of intervention, and it can generally be done by any willing health-care provider. It involves the clinician verbally giving patients permission to bring up sexual issues and legitimizes their concerns. Normalization is a key component to the

success of this intervention because it confirms to patients that they are not alone or unusual for having sexual health concerns, and encourages ongoing discussion (Eisenberg et al., 2015). The second level of intervention is limited information, which involves the clinician providing men with factual information that is directly relevant to their particular sexual issue: awareness of the most commonly experienced sexual dysfunctions, or knowledge of available sexual health services in the local community. To provide the third level of intervention, specific suggestions, the clinician must have training in sexual health such that they can offer appropriate therapies or recommendations for a client's specific concerns. This could include offering a man with a spinal cord injury a trial of a PDE-5 inhibitor for erectile dysfunction. Finally, intensive therapy involves highly specialized assessment and treatment, which is typically limited to dedicated sexual health clinicians or other specialists with specific training and experience (Consortium for Spinal Cord Medicine, 2010). According to the P-LI-SS-IT model, many family physicians and nurse practitioners can confidently support men with sexual concerns related to traumatic spinal cord injuries up to the second or third levels of intervention.

It is important for primary care providers to be aware of the barriers that result in sexuality being under-addressed in men with traumatic spinal cord injuries. For example, understanding that the vast majority of men with traumatic spinal cord injuries report a desire to discuss concerns around their sexual health, but expect their health-care providers to bring up the topic should prompt primary health-care providers to initiate conversations with these patients (Pieters et al., 2018). Introducing the topic of sexual health in a straightforward and nonjudgmental way can help to normalize the discussion, providing permission and affirmation for men to ask questions about and seek remedies for their sexual health concerns (Consortium for Spinal Cord Medicine, 2010). Experts recommend that clinicians say something like: "Many men with spinal cord injuries have questions or concerns about their sexual health. I am always open to discussing this with you, and/or referring you to other specialist clinicians or resources." In these ways, primary health-care providers can norm men's access to and uptake of assistance to optimize their sexual health. Clinicians should initiate conversations with patients using neutral language, such as "partner" instead of "girlfriend/boyfriend," and to avoid making assumptions around an individual's sexual preferences or practices (Consortium for Spinal Cord Medicine, 2010).

Depending on the personal knowledge and expertise of the primary health-care provider, comfort levels around discussing men's sexual health concerns and specific treatment options may vary. Some of the recommended



**Table 3.** Select Online Resources for Sexual Health in Men With Traumatic Spinal Cord Injuries.

SCIRE Professional Spinal Cord Injury Research Evidence (2016) <a href="http://icord.org/research/scire-spinal-cord-injury-rehabilitation-evidence/">http://icord.org/research/scire-spinal-cord-injury-rehabilitation-evidence/</a>	An international Website for health professionals that provides current research evidence compiled in one location. Expert videos on how to assess sexual health after spinal cord injury, sexual medicine for recovery, and the P-LI-SS-IT model.
SCIRE Community Spinal Cord Injury Research Evidence (2016) <a href="https://scireproject.com/community/">https://scireproject.com/community/</a> Sexual Health Rehabilitation Centre: GF Strong Rehabilitation Centre in collaboration with Spinal Cord Injury British Columbia, Canada <a href="https://scisexualhealth.ca/">https://scisexualhealth.ca/</a>	Information and resources about spinal cord injury research presented in everyday language for patients and family members. Information and resources about sexual health, parenting, and relationships for individuals with spinal cord injury. Specific key topics discuss male fertility and sexual self-image.
Sexual Medicine Society of North America (2018) <a href="http://www.sexhealthmatters.org/">http://www.sexhealthmatters.org/</a> Consortium for Spinal Cord Medicine <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2941243/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2941243/</a>	Resources for health professionals and patients, including information related to sexuality and spinal cord injuries in men. Practice guidelines for addressing sexual and fertility issues published in the Journal of Spinal Cord Medicine in June 2010.

topics to include in formal sexuality rehabilitation for men with spinal cord injuries are information on birth control, sexually transmitted infections, safe sex practices, facilitating communication about changes in sexual function, relationship goals, erectile and ejaculatory dysfunction, fertility changes, and appropriate modifications/options for sexual activity (Consortium for Spinal Cord Medicine, 2010; New et al., 2016). Many of these concerns are well within the scope and expertise of primary health-care providers.

There are many excellent international resources available, which can help support primary health-care providers develop understandings about spinal cord injury specific sexual dysfunction, as well as providing guidance on how to identify and address sexual health concerns and when to refer (see Table 3). The (Spinal Cord Injury Research Evidence [SCIRE], 2016) Website for health-care providers has several expert sexual health and spinal cord injury videos on topics including how to assess sexual health after spinal cord injury, basic sexual medicine principles for recovery, and the P-LI-SS-IT model (<https://scireproject.com/videos/how-to/>). In addition, the (Sexual Health Rehabilitation Service [SHRS], 2017) at GF Strong Rehabilitation Centre in partnership with Spinal Cord Injury BC (SCI BC) has created a Website specifically about sexual health following spinal cord injury ([https://scisexualhealth.ca](https://scisexualhealth.ca/)). It includes helpful information on topics relevant to sexuality for both men and women with spinal cord injuries, including relationships, information for partners, sexual self-image, bowel, bladder and mobility concerns, contraception, fertility, and parenting. The (Sexual Medicine Society of North America, 2018) Website (<http://www.sexhealthmatters.org>) offers resources for both health-care providers and patients, and includes information about sexual health concerns related to specific conditions, including spinal cord injuries in

men. The 2010 clinical practice guidelines created by a group of multidisciplinary, international experts from the Consortium for Spinal Cord Medicine (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2941243/>) provide comprehensive, evidence-based recommendations for health-care providers caring for patients with spinal cord injuries to initiate conversations about sexual health, and to assess and manage sexual dysfunction.

It is essential for primary health-care providers to be familiar with the resources and specialty services available in their communities to address specific sexual health and fertility concerns in men with traumatic spinal cord injuries so that they can refer appropriately (Consortium for Spinal Cord Medicine, 2010). Depending on the location, these could include specialized sexual health rehabilitation programs, sexual health nurses, sex therapists, physiotherapists, counselors, occupational therapists, urologists, physical medicine and rehabilitation physicians, and fertility specialists.

## Conclusion

Sexual health is an enduring priority for many men living with traumatic spinal cord injuries; however, it is often inadequately addressed by health-care providers. By virtue of their scope of practice, accessibility, and ability to maintain ongoing therapeutic relationships with these patients in the community setting, primary health-care providers have an opportunity to strongly influence and advance the long-term sexual health and rehabilitation goals of men with traumatic spinal cord injuries. Community-based nurse practitioners and family physicians are ideally situated to compliment the work of multidisciplinary rehabilitation teams by providing these patients with ongoing assessment, management, information about potential interventions, and where necessary,

referrals for their sexual health needs. Primary health-care providers who take up these practices should be supported and commended for their contributions to men's health, and by extension the health of men's families. Given that sexuality is a fundamental component of human well-being, promoting accessible interventions that improve men's sexual health in the context of traumatic spinal cord injuries should be fully integrated to primary health care.

There are limitations to note regarding recommendations derived from a scoping review. Even though half of the articles synthesized in this review comprised review articles or evidence-based recommendations, the results are not espoused as definitive; indeed, acknowledged are the potential for gaps or issues related to men's sexual health beyond what is shared in the current scope. Nonetheless, there was strong consensus in the articles reviewed that medical options are available to address the sexual health and function of men with traumatic spinal cord injuries, especially as they relate to erectile dysfunction and fertility.

While this article has focused specifically on men with traumatic spinal cord injuries, it is important to recognize that other chronic illnesses and disabilities commonly encountered in primary health-care settings are associated with significant sexual health problems. Conditions including cancer, arthritis, multiple sclerosis, Parkinson's disease, diabetes, and depression, for example, frequently lead to changes in men's sexual health, which also tend to be under-addressed (Eisenberg et al., 2015; Pieters et al., 2018). The evidence-based strategies described in this article to support the sexual health of men with traumatic spinal cord injuries could also be highly relevant to optimize the primary care of patients with other chronic illnesses and conditions (Elliott et al., 2017; New et al., 2016).

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