Chronic Illness and Sexual Functioning

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Chronic illness and its treatments can have a negative impact on sexual functioning. The mechanism of interference may be neurologic, vascular, endocrinologic, musculoskeletal, or psychologic. Patients may mistakenly perceive a medical prohibition to the resumption of sexual activity, or they may need advice on changes in sexual activity to allow satisfactory sexual functioning. Family physicians must be proactive in diagnosing and managing the alterations in sexual functioning that can occur with chronic illness. Patient education and reassurance are essential. Before sexual activity is resumed, patients with cardiovascular disease should be stratified according to risk. Patients with musculoskeletal disease should be educated about positional changes that may improve comfort during sexual activity. Psychosocial concerns should be addressed in patients with human immunodeficiency virus infection or acquired immunodeficiency syndrome. In patients with cancer, it is important to discuss sexual problems that may arise because of negative body image and the effects of chemotherapy. Patients who have disabilities can benefit from the use of muscle relaxants, technical adaptations, and expansion of their sexual repertoire. (Am Fam Physician 2003;67:347-54,357. Copyright© 2003 American Academy of Family Physicians.)

A patient information handout on health problems and sex, written by the authors of this article, is provided on page 357.

Sexual functioning is a complex process that depends on the neurologic, vascular, and endocrine systems, and is influenced by numerous psychosocial factors, including family and religious background, the sexual partner, and individual factors such as self-concept and self-esteem. Sexuality can be altered by aging, life experiences (e.g., abuse), and various illnesses and their treatments.

Sexuality has received little scholarly attention, and professional training in sexual health is limited. Although the available literature demonstrates the importance of sexuality to patients,[1-6] physicians often do not introduce the subject during clinical encounters[4] or address sexual concerns in patients who have chronic diseases.[7] Because of the complexity of these illnesses and their treatments, as well as time constraints, inquiry about sexual functioning may be neglected. Without physician prompting, patients are reluctant to bring up sexual concerns.[2,8]

Patients who have chronic illness often have difficulties with sexual functioning.[7,9] With an understanding of the impact that chronic illness can have on sexual functioning and the use of basic management strategies, family physicians can readily screen for and manage sexual dysfunction, thereby enhancing quality of life for their patients.

See page 237 for definitions of strength-of-evidence levels.

Chronic Illness and Sexual Health

ISSUES FOR PATIENTS

Although the physical demands of sexual activity are high,[10,11] few, if any, chronic illnesses require restriction of sexual activity. However, couples may have to alter their sexual activity to accommodate physiologic or mechanical limitations.

Patients with chronic illness may become disinterested in sex or may become sexually inactive because of misconceptions about their ability to have sex or the safety of having sexual relations, or because of body-image concerns or grief related to the diagnosis of their disease.[12] Depression, fatigue, pain, stress, and anxiety may further contribute to sexual dysfunction. These problems may affect the willingness of patients or their partners to engage in sexual or other intimate relations. However, touch and physical intimacy are extremely important for severely debilitated or terminally ill patients.[7]

TABLE 1
Sexual Response Cycle

Cycle phase	*Features*	*Gender differences*
Desire	Physiologic factors (neurotransmitters, androgens, and sensory system) and a wide variety of environmental stimuli (psychosocial and cultural factors) Desire causes a person to initiate or be receptive to sexual activity.	Women: touch, verbal stimuli, and relationship of greater import Men: visual stimuli of greater import
Arousal	Parasympathetic nervous system and vascular system Breathing becomes heavier, heart rate and blood pressure increase, and reflexive vasocongestion occurs.	Women: vaginal lubrication and enlargement of clitoris Men: penile erection
Plateau	Parasympathetic nervous system and vascular system Vasocongestion phase is at its peak; sexual tension increases and then levels off immediately before orgasm; there are carpopedal spasms, generalized skeletal muscular tension, hyperventilation, tachycardia, and increased blood pressure (by 20 to 30 mm Hg systolic and 10 to 20 mm Hg diastolic).	Women: maximal vaginal lubrication and genital vasocongestion Men: distension of penis to its capacity
Orgasm	Sympathetic nervous system and muscle tone For both sexes, there is heightened excitement to a peaking of subjective pleasure, followed by release of sexual tension; awareness of other sensual experiences is diminished, and the person becomes self-focused; pelvic response consists of involuntary contractions and myotonia; tension may be felt and seen in neck and face (grimaces), buttocks, thighs, and toes; there are carpopedal spasms, contractions of arms and legs, external rectal sphincter contractions, external urethral sphincter contractions, hyperventilation (up to 40 breaths per minute), tachycardia (up to 180 beats per minute), and increased blood pressure (by 30 to 80 mm Hg systolic and 20 to 40 mm Hg diastolic).	Women: contraction of uterus from fundus toward lower uterine segment, and contractions of orgasmic platform (five to 12 contractions at 0.8-second intervals) Men: with emission, semen spurts out of fully erect penis (three to seven ejaculatory spurts at 0.8-second intervals); contractions of internal organs and signal of ejaculatory inevitability (roughly 1 to 3 seconds before start of ejaculation) are followed by rhythmic contractions of penile urethra and perineal muscles (experienced as orgasm proper); after orgasm, the man is refractory to sexual stimulation for a period of time before he can be stimulated to orgasm again.
Resolution	Sympathetic nervous system Body returns to pre-excitement phase as vasocongestion is relieved and hyperventilation and tachycardia decrease.	Women: ready return to orgasm with slow loss of pelvic vasocongestion Men: in very young men, a second ejaculation may occur without loss of erection; in older men, involution of penis occurs more rapidly, often within minutes.

Adapted with permission from Nusbaum MR. Sexual health. Monograph no. 267, Home Study Self-Assessment Program. Leawood, Kan.: American Academy of Family Physicians, 2001; based on information from references 10 and 11.

SEXUAL RESPONSE CYCLE AND CHRONIC ILLNESS

A knowledge of the sexual response cycle—desire, arousal, plateau, orgasm, and resolution—is important to understanding the impact that chronic illness can have on sexual functioning *(Table 1)*.[10,11,13]

Desire is influenced by neurotransmitters, androgens, and the sensory system. It is also influenced by psychosocial factors such as self-esteem, body image, and the relationship with the sexual partner. Any illness or treatment that affects these factors can have a negative impact on a patient's interest in initiating or being receptive to sexual activity.

Arousal and plateau require intact vascular and parasympathetic nervous systems. Orgasm requires an intact sympathetic nervous system, and its intensity is affected by muscle tone.

Chronic medical illnesses tend to disrupt the desire and arousal phases of the sexual response cycle. For example, the diagnosis of diabetes and the subsequent emphasis on lifestyle changes can have a negative effect on a patient's body image and perception of self as a sexual being. Furthermore, neurologic disorders potentially affect desire, arousal, and orgasm.

Treatments for chronic illnesses also can disrupt the sexual response cycle. Antihypertensive drugs negatively affect arousal. Psychotropic agents interfere with desire and arousal; they can also disrupt orgasm. Surgical treat-

TABLE 2
General Strategies for Optimizing Sexual Functioning in Patients with Chronic Illness

Dietary strategies	Environmental strategies	Psychologic strategies*
Avoiding tobacco in any form	Planning sexual activity for time when energy level is highest (and when rested and relaxed)	Enhancing sexual expression through use of senses
Limiting alcohol intake	Planning sexual activity for time of day when symptoms tend to be least bothersome	Maximizing use of nonsexual intimate touching
Delaying sexual activity until 2 or more hours after drinking alcohol or eating	Avoiding extremes of temperature	Communicating likes, dislikes, and needs to partner
Medication strategies	Experimenting with different sexual positions or using pillows to maximize comfort	Using self-stimulation as needed to reduce anxiety, help with sleep, and provide general pleasure
Taking pain medications (if needed) about 30 minutes before sexual activity	Maintaining physical conditioning to highest possible level	Using self-help books that cover the subject of chronic illness and sexual activity
Reducing or stopping medications that have a negative impact on sexual functioning (see Table 3)		
Treating depression		

*—*The patient's sexual partner may need to accept the patient's lack of sexual interest or decision to have no sexual partner.*

Information from reference 13.

ments such as transurethral prostatectomy can interfere with arousal and orgasm by disrupting delicate sympathetic and parasympathetic pathways.

SEXUAL HISTORY AND COMMUNICATION

Sexual health may have a direct impact on the overall well-being of patients with chronic illness. Therefore, it is important to obtain a sexual history. The physician's proactive leadership in initiating the discussion lets the patient know that sexuality is an important aspect of health.[14]

Inquiry should be sensitive, but direct enough to clarify the issues. Emphasizing the commonality of concerns about sexual functioning may ease discomfort. In a patient who has arthritis, for example, the physician might begin with the following: "It is common for people with arthritis to notice changes in their sexual lives. Has weakness or pain limited your sexual activity?"

A patient or sexual partner may worry that resuming sexual activity could exacerbate musculoskeletal problems or, in the case of myocardial infarction, precipitate another heart attack. An open-ended question may have a dual function: inquiry about the presence of a sexual problem and exploration of what the patient or couple may have done to try to resolve the problem. If the patient has had a myocardial infarction, the physician might say: "It is common for people who have had a heart attack to worry about resuming sexual activity. How have you and your partner done in this area?" Seeing the patient and partner together also allows the physician to assess the effectiveness of the couple's general communication and, in particular, their ability to discuss sexual concerns.

The comfort exhibited by the physician in addressing sexual functioning can enhance the comfort with which the patient or couple can express concerns. By directly asking about sexual health and making suggestions for adapting sexual activity to offset the negative impact of an illness, the physician gives the patient "professional permission" to discuss sexual functioning and to continue having an active sex life.[13,14]

Chronic Illness and Preservation of Sexual Activity

General strategies for optimizing sexual functioning are provided in *Table 2*.[13] These strategies include varying the sexual position, timing sexual activity, timing medication administration, and reducing or eliminating the use of offending agents such as alcohol, tobacco, and certain medications.

Many drugs can contribute to sexual dysfunction *(Table 3)*.[13,15,16] However, it may not be possible to discontinue all medications that may interfere with sexual functioning. In this

Patients at indeterminate risk for cardiovascular events with sexual activity may require exercise treadmill testing and echocardiographic evaluation for left ventricular dysfunction; based on the study findings, these patients may be reclassified as low or high risk.

situation, the physician may need to help the patient and partner develop alternative means of sexual expression and intimate contact. The physician should encourage the patient to enhance the senses through nonsexual touch and the use of lubricants, massage, dancing, music, scented candles, and signals for indicating when something is particularly pleasurable. When more intensive guidance is needed, referral for cognitive behavioral therapy may be beneficial.

Cardiovascular Disease

Acute cardiovascular conditions result in only a temporary prohibition of sexual activity. Based on expert opinion, an exercise treadmill study before the resumption of sexual activity is more important when the use of sildenafil (Viagra) is being considered, particularly in patients who have been sexually inactive or who have multiple risk factors for coronary heart disease or significant congestive heart failure.[17] [Evidence level C, consensus/expert guidelines]. In placebo-controlled trials,[18,19] the incidence of cardiovascular events in men was similar for the use of placebo (5 percent) or sildenafil (3 percent), and the estimated risk of sudden death during sexual intercourse was between 0.3 percent and 3.3 percent.

An expert panel[17] recommends stratifying patients into low-, indeterminate-, and high-risk categories based on risk factors for the occurrence of cardiovascular events with sexual activity *(Table 4)*. In low-risk patients, no further work-up is required for the resumption of sexual activity or the treatment of sexual difficulties. Patients at indeterminate risk may require exercise treadmill testing and echocardiographic evaluation for left ventricular dysfunction; based on the study findings, these patients may be reclassified as low or high risk.

A cardiology consultation may be considered for patients at indeterminate or high risk. Cardiovascular rehabilitation may be necessary to lower the risk of sexual activity in patients at indeterminate risk. The panel[17] recommends that high-risk patients defer sexual activity

TABLE 3
Drugs Associated with Sexual Dysfunction

Anorectics	Diuretics
Antiandrogens	Hormones
Antiarrhythmics	Lipid-lowering agents
Anticholinergics	Neuroleptics
Antihistamines*	Oncologic agents
Antihypertensives	Opiates
Antivirals	Psychotropics
Anxiolytics	Recreational or illicit drugs
Corticosteroids	Sedative-hypnotics
Decongestants	Stimulants

**—Including histamine H_2 blockers.*

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until cardiac function is stabilized and they can be restratified into the low-risk category.

As exercise tolerance improves, sexual activity also can improve. The physician should reevaluate the patient who experiences prolonged palpitations, dizziness, angina, or intense or prolonged fatigue during sexual activity. If sexual activity precipitates angina, nitroglycerin taken before sexual relations may be beneficial in some patients. Nitroglycerin should not be taken by patients who are using sildenafil.

Fear and lack of information often prevent patients with cardiovascular disease from resuming sexual activity.[20] The ability to climb two sets of stairs is a good indication that a patient can tolerate the cardiovascular demands of sexual activity.[21] Until the patient has the necessary strength for sexual activity, alternative forms of intimate physical contact can be encouraged (e.g., holding hands, hugging, kissing, massage, use of a vibrator, mutual masturbation, and intimate verbal communication). Less active sexual positions (semireclining, on-the-bottom, and seated positions) may help reduce cardiovascular and respiratory effort. Note that if the patient and partner are not accustomed to varying sexual positions or are new sexual partners, the heightened eroticism can increase overall cardiovascular demand.

If sexual activity precipitates angina, nitroglycerin taken before sexual relations may be beneficial in some patients.

The findings of an exercise treadmill test can provide reassurance for both patient and physician. A patient who can exercise to the level of 5 to 6 metabolic equivalents on a treadmill is at low risk for cardiac events from sexual activity.[21,22]

Many cardiovascular medications can contribute to sexual dysfunction *(Table 3)*.[13,15,16] When possible, other agents should be substituted for offending medications. Calcium channel blockers, alpha blockers, and angiotensin-converting enzyme inhibitors typically are less disruptive to sexual functioning. In a recent study, use of losartan (Cozaar) was found to enhance erectile function and sexual

TABLE 4
Risk Categories for Cardiovascular Events with Sexual Activity

Low risk	Indeterminate risk	High risk
Less than three risk factors*	Three or more risk factors	Unstable or refractory angina
Stable angina	Moderate, stable angina	Uncontrolled hypertension
Controlled hypertension	Six weeks or less since myocardial infarction	NYHA class III/IV congestive heart failure
More than 6 weeks since myocardial infarction	NYHA class II congestive heart failure	Less than 2 weeks since myocardial infarction
Postcoronary revascularization	Noncardiac atherosclerotic disease: cerebrovascular accident,† peripheral vascular disease, transient ischemic attack	Significant arrhythmias‡
Mild valvular disease		Hypertrophic obstructive cardiomyopathy
		Moderate to severe valvular disease

NYHA = New York Heart Association.

**—Risk factors include age of at least 50 years, male gender, postmenopausal status in women, obesity, smoking, hyperlipidemia, sedentary lifestyle, hypertension, and diabetes.*

†—*Thrombosis, hemorrhage, or embolism of cerebral blood supply.*

‡—*Patients with pacemakers and implanted defibrillators are not at greater risk for cardiovascular events associated with sexual activity.*

Adapted with permission from DeBusk R, Drory Y, Goldstein I, Jackson G, Kaul S, Kimmel SE, et al. Management of sexual dysfunction in patients with cardiovascular disease: recommendations of The Princeton Consensus Panel. Am J Cardiol 2000;86:178.

In women with breast cancer, breast-sparing procedures and postmastectomy plastic surgery can reduce the negative effects of cancer on body image.

satisfaction in men with hypertension who had erectile difficulties.[23] [Evidence level B, nonrandomized clinical trial]

Chronic Respiratory Illness

Chronic respiratory illness, such as chronic obstructive pulmonary disease, can be accompanied by muscle weakness, fatigue, and poor stamina. The high physiologic demands of sexual activity can lead to shortness of breath and hypoxia.[24] The patient's use of an inhaler before sexual activity and the couple's use of less active positions for sexual activity can help in maintaining a satisfactory sex life. Benefit also can be derived from a physical rehabilitation program to enhance the patient's muscle tone and strength.

Musculoskeletal Disorders

Pain syndromes, muscle spasms, stiffness, and problems with flexibility and mobility may affect a patient's willingness or ability to engage in sexual activity. Trying different sexual positions may help. Placing pillows or padding around the body or under joints may ease pain during sex. The patient may achieve additional relief by taking a warm shower before sexual activity or using a waterbed to relieve pressure on painful joints.

Human Immunodeficiency Virus Infection

The low testosterone levels noted in men with human immunodeficiency virus (HIV) infection, particularly those with acquired immunodeficiency syndrome (AIDS), can exacerbate existing problems with sexual functioning, mood, and energy. These problems may contribute to decreased sexual interest and arousal.[25-27] HIV-infected women also develop sexual dysfunction that impairs their intimate relationships and negatively affects their quality of life.[27] In many patients with HIV infection or AIDS, sexual desire decreases because of fatigue, generalized wasting, muscle aches, pains, paresthesias, and depression. Body-image concerns worsen with symptomatic disease.[28]

Protease inhibitors have an adverse effect on desire and arousal.[29,30] Although transmission of HIV with viral loads of less than 1,500 copies per mL is reportedly rare,[31] HIV-discordant couples must practice safe sex. The physician should explore the couple's understanding of safe-sex practices and should emphasize the importance of using condoms, dental dams, and water-based lubricants. HIV-positive patients who do not have a partner may face difficulty in establishing a relationship.

Cancer

The effects of cancer on sexuality include changes in physical appearance because of surgery or radiation therapy, and the negative side effects of various cancer treatments. In addition, psychosocial responses, including grief, depression, and anxiety, occur frequently with a life-threatening diagnosis. Furthermore, challenges in communication can occur around issues of life changes induced by the diagnosis and treatment of cancer, as well as the threat of its recurrence.

Survivors of ovarian cancer have been found to be at high risk for depression, anxiety, sexual dysfunction, and identity disturbance.[32] In women with breast cancer, postmenopausal symptoms from chemotherapy-induced ovarian failure are often exacerbated by tamoxifen (Nolvadex).[33] Use of lubricants can provide sexual enhancement through heightened sensitivity and reduced dyspareunia. In women with breast cancer, breast-sparing procedures and postmastectomy plastic surgery can reduce the negative effects of cancer on body image.

Cancer that requires testicular, penile, rectal, or prostate surgery can have similar negative effects on sexual health. Impairment of sexual functioning and distress about infertility are recognized consequences of testicular cancer

treatments.[34] Medications such as leuprolide (Lupron), which has a significant antiandrogenic effect, may interfere with sexual interest.[35] In addition, fear of physical harm from sexual activity may reduce interest in sex. Slow resumption of sexual activity, perhaps beginning with massage or even mutual masturbation, can reduce performance anxiety.

One study[36] demonstrated a time-dependent success rate for the use of sildenafil after nerve-sparing radical retropubic prostatectomy. The rate of patient satisfaction with erectile function improved from 26 percent at six months after surgery to 60 percent at 18 months. If sildenafil produces no improvement in erectile function by two years after prostate surgery, other treatment options should be explored.

When chemotherapy or radiation treatment damages reproductive capability, the patient or couple may have to face fertility issues.[32,34,37]

Physical Disability

SPINA BIFIDA

A survey[38] found that the vast majority of young people with spina bifida and their parents felt that they knew very little about sexuality and reproductive health as they pertain to this developmental anomaly. Nearly all respondents indicated that they would talk about sexuality and reproduction if their physician initiated the discussion.

Anticipatory guidance can help children and adolescents with spina bifida (and their parents) prepare for sexual development. Attention should be given to body image, physical limitations, and challenges regarding self-image and social acceptance.

SPINAL CORD INJURY

Spinal cord injury and other conditions that impair the neurologic system can have varying effects on sexual functioning. It is important for the patient or couple to identify areas of the body that allow sensation and to use these areas to augment sexual expression. If sphincter control has been lost, it can be helpful to empty the bowels and bladder before sexual activity. If spasticity of the hips and lower extremities interferes with enjoyment and performance, muscle relaxants may be beneficial.

Despite lack of sensory experience, erections or vaginal lubrication may be possible through spinal reflexes, or through psychogenic reflexes when spinal reflex centers are affected. "Stuffing" is a technique that can be used when a man is unable to have a functional erection. In this technique, the semierect or flaccid penis is literally stuffed into the vagina. The female partner then uses her pubococcygeal muscles to grip the penis; through this means, she may be able to experience sexual satisfaction and orgasm. Many couples also learn to expand their sexual repertoire to include oral-genital sex, fantasy, and sensory experience.

Fertility is another issue in spinal cord injury. Most men with spinal cord injury are infertile secondary to ejaculatory dysfunction, impaired spermatogenesis, and poor semen quality.[39]

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