

# Arriving at the diagnosis of female sexual dysfunction

Erin Z. Latif, M.D.<sup>a</sup> and Michael P. Diamond, M.D.<sup>b</sup>

<sup>a</sup> Division of General Gynecology and Obstetrics and <sup>b</sup> Division of Reproductive Endocrinology and Infertility, Department of Obstetrics and Gynecology, Georgia Regents University, Augusta, Georgia

Female sexual dysfunctions include a group of sexual complaints and disorders affecting women of all ages, and stemming from a heterogeneous array of etiologies and contributing factors. The classification system for sexual dysfunctions in the woman has evolved from a linear categorization of sexual desire, arousal, orgasm, and pain disorders to one that is more complex and overlapping. Personal distress is a key factor in defining a sexual problem as a dysfunction. The recently released *Diagnostic and Statistical Manual of Mental Disorders*, edition 5, collapses former definitions of female sexual disorders and moves away from the older linear model of diagnostic categories. Physicians should be open to discussing sexual problems with women, and may make use of validated questionnaires in the office setting. Evaluation tools available for assessing sexual function in the woman are in use in the research setting, as are physiological measures of assessment. (*Fertil Steril*® 2013;100: 898–904. ©2013 by American Society for Reproductive Medicine.)

**Key Words:** Female sexual dysfunctions, classification of sexual dysfunctions, diagnosis of sexual dysfunctions, DSM-5

**Discuss:** You can discuss this article with its authors and with other ASRM members at <http://fertstertforum.com/latifez-diagnosis-female-sexual-dysfunction/>



Use your smartphone to scan this QR code and connect to the discussion forum for this article now.\*

\* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Sexual dysfunctions include a classification of sexual complaints and disorders affecting many women in the general population that have a major impact on quality of life and interpersonal relationships (1, 2). Often, female sexual dysfunctions are underdiagnosed and undertreated, as practitioners are frequently limited by a poor understanding of their multifactorial nature, as well as limited treatment options. However, as society is becoming more comfortable with open discussions regarding sex, women are becoming more willing to open up about their sexual difficulties and seek treatment for them. Therefore it is important for clinicians to have a comprehensive understanding of the components of the evaluation of a

woman's sexual difficulties, as well as the current diagnostic classification system for sexual dysfunctions.

Prevalence of female sexual dysfunctions has for many years been estimated at 43% based on data from the National Health and Social Life Survey, which examined a cohort of US adults in 1992 (1). In this survey, which contained seven response items measuring the presence of specific sexual symptoms or problems during the past 12 months, a strong association was found between sexual problems and decreased physical satisfaction, emotional satisfaction, and overall life satisfaction. More recent data from a cross-sectional, population-based study of female adults in the United States called Prevalence of Fe-

male Sexual Problems Associated with Distress and Determinants of Treatment Seeking, determined that the prevalence of any sexual problem was 44.2% (2). However, these prevalence rates may be misleading, as they are not limited to sexual symptoms and problems that actually meet criteria for diagnosis of a sexual dysfunction.

According to the National Health and Social Life Survey more women (43%) than men (31%) reported sexual problems (1). Of women who report any type of sexual difficulty, difficulty with sexual desire is the most common (mean 64%) followed by difficulty with orgasm (mean 35%), difficulty with arousal (mean 31%), and sexual pain (mean 26%). Many women are affected by more than one type of sexual difficulty. However, due to substantial inconsistencies in the ways female sexual dysfunctions have been measured, overall estimates of sexual dysfunctions may be unreliable (3).

## PERSONAL DISTRESS

Sexual problems can be classified as sexual complaints, dysfunctions, or

Received June 1, 2013; revised July 23, 2013; accepted August 3, 2013; published online September 4, 2013.

E.Z.L. has nothing to disclose. M.P.D. has had grant support from Boehringer Ingelheim, Biosante, AbbVie, EMD Serono, and Ferring Pharmaceuticals; has been a consultant to Auxogyn and Halt Medical; serves on the Board of Directors of Advanced Reproductive Care; and has stock ownership in Advanced Reproductive Care and DS Biotech.

Reprint requests: Michael P. Diamond, M.D., Department of Obstetrics and Gynecology, Georgia Regents University, BA 7300, 1120 15th Street, Augusta, Georgia 30912 (E-mail: [michael.diamond@gru.edu](mailto:michael.diamond@gru.edu)).

*Fertility and Sterility*® Vol. 100, No. 4, October 2013 0015-0282/\$36.00  
Copyright ©2013 American Society for Reproductive Medicine, Published by Elsevier Inc.  
<http://dx.doi.org/10.1016/j.fertnstert.2013.08.006>

disorders. Disorders encompass dysfunctions associated with personal distress (4). Women vary considerably in how they rate the importance of sex, their preferred sexual practices, their idea of optimal sexual frequency, and the amount of stimulation required for arousal and satisfaction (5). Despite the many women with sexual problems or dysfunctions, it is important to note that a smaller, but still significant, proportion of women report personal distress due to their sexual problems. In the Prevalence of Female Sexual Problems Associated with Distress and Determinants of Treatment Seeking study, personal distress was associated with sexual problems of desire, arousal, and orgasm in about 12% of US adult women (2). This is the population of concern to clinicians. These one in eight women reported experiencing guilt, frustration, stress, worry, anger, embarrassment, or unhappiness about their sex lives, and are the women seeking intervention.

## AGE

Cross-sectional studies provide strong evidence that sexual activities and sexual function generally decline with age. This decline has been found to begin sometime between the late 20s and late 30s, but this assessment is based on limited data (6). In addition, many women describe a decline specifically with menopause (5). Only a small percentage of women in longitudinal studies (5%–15%) report an improvement in sexual activities and function with age (6).

A decline in desire after menopause is not as common as difficulty with arousal. In one survey of 580 menopausal women, 45% reported a decrease in desire (7). However, menopause also clearly causes objective changes in genital perfusion, engorgement, and lubrication, as well as touch perception and vibratory sensation. Orgasm typically changes very little after menopause, although clitoral stimulation may need to be more direct, intense, and sustained to achieve orgasm (5).

However, a decrease in sexual function and activities does not automatically imply a sexual dysfunction or disorder. Studies have shown that despite a decrease in sexual activity with advancing age, the prevalence of distressing sexual problems, particularly problems related to desire, is actually highest in women aged 44–65 years, then declines at older ages (2). One theory is that this is a result of changes

in sexually related personal distress due to either lower expectations regarding sex, or a decrease in the perceived importance of sex with age (6).

## THE SEXUAL RESPONSE

The human sexual response is historically thought of as a linear process of distinct phases, as initially defined by Masters and Johnson (excitement, arousal, orgasm, and resolution) (8). This was later modified by Kaplan into a three-phase model of desire, arousal, and orgasm (9). A more complex and nonlinear model of the female sexual response is now understood to include emotional and relational factors, as well as external and cognitive sexual stimuli (10, 11).

Sex generally begins with desire, and it is now understood that desire can occur spontaneously (innate desire), or be stimulated externally or by way of cognitive motivation. External or cognitive incentives may include the desire to feel close to one's partner, to experience sexual pleasure, to improve self-image, to relieve tension, to reduce guilt over sexual infrequency, or to conceive (5, 10).

Sexual arousal includes both subjective excitement and physiological or genital arousal. These two are often distinct from one another, and studies have shown a poor correlation between subjective and physiological arousals. Healthy women with arousal disorder have shown normal genital vasocongestion in response to erotic stimuli despite complaints of low subjective arousal (5, 11).

The two basic physiological reactions during the human sexual response are vasocongestion of the genitals and increased neuromuscular tension throughout the body (8). Increased blood flow to the genitalia results in vasocongestion, which promotes vaginal lubrication and engorgement. The vagina lengthens and dilates due to relaxation of smooth muscle. Increased blood flow also results in engorgement and protrusion of the clitoris and vestibulovaginal bulbs, and eversion and engorgement of the labia minora (4, 12).

## CAUSATIVE FACTORS

Sexual dysfunction is a term used to describe various sexual problems with overlapping biological, psychological, and interpersonal etiologies (Table 1) (13). Therefore, it is important to determine any underlying disorders or contributing

**TABLE 1**

**Causes of female sexual dysfunction.**

Physiological	
Neurogenic	CNS: Spinal cord injury PNS: Upper motor neuron injury, peripheral neuropathy (diabetes)
Endocrine	Menopause, premature ovarian failure, HPO dysfunction, chronic hormonal contraceptive use
Vascular	Atherosclerosis, trauma
Anatomic	Pelvic floor injury (hypotonicity) or spasm (hypertonicity)
Pharmacologic	Psychotropic medication use (SSRIs)
Psychological	
Emotional	Poor body image or self-esteem, mood disorders, fatigue, stress
Relational	Marital or relationship problems, history of trauma, cultural beliefs

Note: Adapted from references 4 and 13. CNS = central nervous system; HPO = hypothalamic-pituitary-ovarian axis; PNS = peripheral nervous system; SSRI = selective serotonin reuptake inhibitor.

Latif. *Diagnosing female sexual dysfunction. Fertil Steril* 2013.

**TABLE 2**

**Classification of sexual dysfunction.**

	Desire disorders					Sexual pain disorders				
	Combined desire and arousal disorders					Dyspareunia	Vaginismus	Genitopelvic pain/penetration disorder		Noncoital pain
	Sexual aversion disorder	Hypoactive sexual desire	Arousal disorder	Female sexual interest/arousal disorder	Orgasmic disorder					
ICD-10 (1992)	✓	✓	✓		✓	✓	✓			
DSM-IV-tr (2000)	✓	✓	✓		✓	✓	✓			
ICSM (2010)		✓	✓		✓	✓	✓			
DSM-V (2013)				✓	✓			✓	✓	

Note: DSM = Diagnostic and Statistical Manual of Mental Disorders; ICSM = International Consensus of Sexual Medicine.

Latif. Diagnosing female sexual dysfunction. *Fertil Steril* 2013.

biopsychosocial factors when evaluating a patient with sexual problems. Sexual dysfunction may actually be a symptom or side effect rather than a primary pathology (10).

From an organic standpoint, sexual function is reliant on neurogenic (central nervous system and peripheral nervous system neurotransmitters), hormonal (sex hormones), vascular (genital blood flow), and anatomic (pelvic floor muscles) components (Table 1). Underlying medical conditions and medication side effects can also be major contributing factors. Incidence of selective serotonin reuptake inhibitor-induced sexual dysfunction has been shown to be as high as 30%–50%, and usually manifests as delayed or absent orgasm or decreased libido (4).

Neurotransmitters, bioactive substances, and sex steroids are thought to play a role, including dopamine, norepinephrine, serotonin, acetylcholine, nitric oxide, vasoactive intestinal peptide, prostaglandin E<sub>1</sub>, estrogen (E), T, P, oxytocin, prolactin, and  $\alpha$ -melanocortin-stimulating hormone (5).

Contextual factors surrounding a sexual encounter may reduce arousability, including concerns about safety, pregnancy, or sexually transmitted diseases (STD), lack of privacy or sufficient time, stress, or fatigue (10). In addition, personal psychological factors can have a significant effect on desire. These may include low self-image, anxiety or depression, or past negative sexual experiences such as abuse or pain (10). Current medical conditions may affect sexual confidence as well, especially if they cause comorbid depression, pain, immobility, or incontinence (11).

Relationship factors, including the presence of a partner, the length of the relationship, and a woman’s feelings toward her partner may change as a woman ages. Also, as a woman ages so too does her partner. The age, health, and sexual function of the male partner will have an impact on sexual activities (6).

**THE HISTORY OF SEXUAL DYSFUNCTION: DIAGNOSES AND DEFINITIONS**

In the early versions of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (DSM), there were only two sexual dysfunctions listed: frigidity (for women) and impotence (for men) (14). The category of Psychosexual Disorders was first included in the third edition (DSM-III) in 1980, where they were defined as “inhibitions

in sexual desire or the psychophysiological changes that characterize the sexual response cycle” (15). The diagnosis of Inhibited Sexual Desire included inhibitions during any one of the sexual phases outlined by Masters and Johnson in 1966: appetitive, excitement, orgasm, and resolution (8). In the 1987 revision of the DSM-III (DSM-III-R), Inhibited Sexual Desire was subdivided into two categories: Hypoactive Sexual Desire Disorder (lack of interest in sex) and Sexual Aversion Disorder (a phobic aversion to sex). Since this time, great strides have been made in expanding diagnostic classifications and definitions of sexual dysfunctions (Table 2).

The World Health Organization’s *International Classification of Diseases, 10<sup>th</sup> Revision* (ICD-10), released in 1992, defines sexual dysfunctions as various ways in which an individual is unable to participate in a sexual relationship as he or she would wish. Categories included lack or loss of sexual desire, sexual aversion and lack of sexual enjoyment, failure of genital response, orgasmic dysfunction, nonorganic vaginismus, nonorganic dyspareunia, and excessive sexual drive (16).

The DSM-IV (released in 1994 with a text revision in 2000) sought compatibility with the ICD-10 (17). There are four categories of sexual dysfunction according to the DSM-IV, which are still based on the linear model of human sex response of Masters and Johnson (8): disorders of sexual desire, arousal, and orgasm, as well as disorders of sexual pain (Table 2). In addition, to make a diagnosis of a disorder, the sexual function must cause marked distress and interpersonal difficulty (18). The DSM-IV also subtypes the disorders in terms of nature of their onset (lifelong vs. acquired), the context in which they occur (generalized or situational), and etiologic factors (due to primarily psychological factors or with contributing medical or substance use factors) (18). Sexual dysfunctions due exclusively to a medical condition are described separately.

In 1998 an interdisciplinary consensus panel (the International Consensus Development Conference on Female Sexual Dysfunction) was convened to evaluate and revise existing definitions and classifications laid out in the ICD-10 and DSM-IV. The consensus expanded classifications to include psychogenic and organic causes of desire, arousal, orgasm, and sexual pain disorders. Changes were made in the definitions and criteria for each diagnosis, and emphasis was placed on the use of a personal distress criterion. Also, a new category of sexual pain disorder was added called “noncoital

sexual pain disorder.” There were also discussions about introducing a new category of “sexual satisfaction disorder” to apply to women unable to achieve subjective sexual satisfaction despite adequate desire, arousal, and orgasm (19). However, this failed to achieve consensus approval.

Subsequently, the Second (2004) and Third (2010) International Consensus of Sexual Medicine accepted revised definitions of female sexual function and dysfunction (4, 10, 11). The consensus emphasizes a movement away from the linear model of discrete and nonoverlapping phases of sexual function (desire → arousal → orgasm → resolution), and toward a more circular model depicting the variety of triggers to the responsive component of women’s desire (10, 11). It is emphasized that innate sexual fantasies and desire are not necessary for healthy sexual activity, and that desire should be regarded as the result of an incentive (sexual stimulus) that may be physically or subjectively perceived. Also, arousal disorder is subclassified into subjective arousal disorder, genital arousal disorder, combined genital and subjective arousal disorder, and persistent genital arousal disorder, taking the emphasis away from the “lubrication/swelling response” and citing the poor correlation between subjective and genital sexual arousal (11).

The DSM-5, released in May 2013, also takes the focus away from the four distinct phases of the sexual response cycle. Sexual desire and arousal disorders have now been combined into one disorder: female sexual interest/arousal disorder. Sexual aversion disorder has been removed due to rare use and lack of supporting research. The diagnoses of vaginismus and dyspareunia have been merged into a new genitopelvic pain/penetration disorder (Table 2). All of the DSM-5 sexual dysfunctions now require a minimum duration of 6 months and more precise severity criteria to distinguish transient sexual difficulties from more persistent sexual dysfunctions. The DSM-5 also deleted the subtypes of sexual dysfunction due to a general medical condition or due to psychological versus combined factors, noting that most sexual dysfunctions are a result of both psychological and biological factors. Contributing factors, including partner factors, relationship factors, individual vulnerability factors, cultural or religious factors, and medical factors are also described (20).

## EVALUATION OF THE PATIENT WITH SEXUAL CONCERNS

Evaluation of female sexual dysfunctions is often limited by time constraints, physician or patient discomfort, difficulty with diagnosis, lack of available referral services, and limited treatment options (4). In a 2004 survey of physicians attending annual meetings at the American College of Obstetricians and Gynecologists, the Endocrine Society, the North American Menopause Society, and the American Society for Reproductive Medicine, participants identified limited time as the greatest obstacle to discussing sexual health. Other limitations included embarrassment (on the part of the physician or the patient), lack of effective treatment options, limited training in female sexual function, and reliance on patients to initiate the discussion (21).

The diagnosis of female sexual dysfunctions can be made in the office setting using validated sexual function instru-

ments, although most of these self-report or interview questionnaires are primarily used in the research setting. A structured interview with a detailed sexual history should then follow any questionnaire to confirm the diagnosis. A diagnostic algorithm based on the recently released DSM-5 classification system and the latest International Consensus of Sexual Medicine recommendations is presented to assist with evaluation of patients with sexual complaints (Fig. 1). This tool contains various questions specific to sexual complaints that may be asked by practitioners to help them to arrive at a particular sexual disorder diagnosis.

The Brief Sexual Symptom Checklist for Women is a self-report tool that may be useful in the primary care setting (Table 3). It consists of four basic questions with regard to the patient’s satisfaction with her sexual function, details about specific sexual problems, and the willingness of the patient to discuss them with the physician (22). The Brief Index of Sexual Functioning for Women is a 22-item standardized self-report measure of overall sexual function in women. It assesses the major dimensions of sexual desire, arousal, orgasm, and satisfaction (23). The Decreased Sexual Desire Screener is a brief diagnostic instrument for generalized acquired Hypoactive Sexual Desire Disorder in women, and was recently found to have a sensitivity of 95%–96% in North American and European trials (24). The Female Sexual Function Index is a 19-item self-report questionnaire that assesses sexual functioning in women in six separate dimensions (desire, arousal, lubrication, orgasm, satisfaction, and pain) (25).

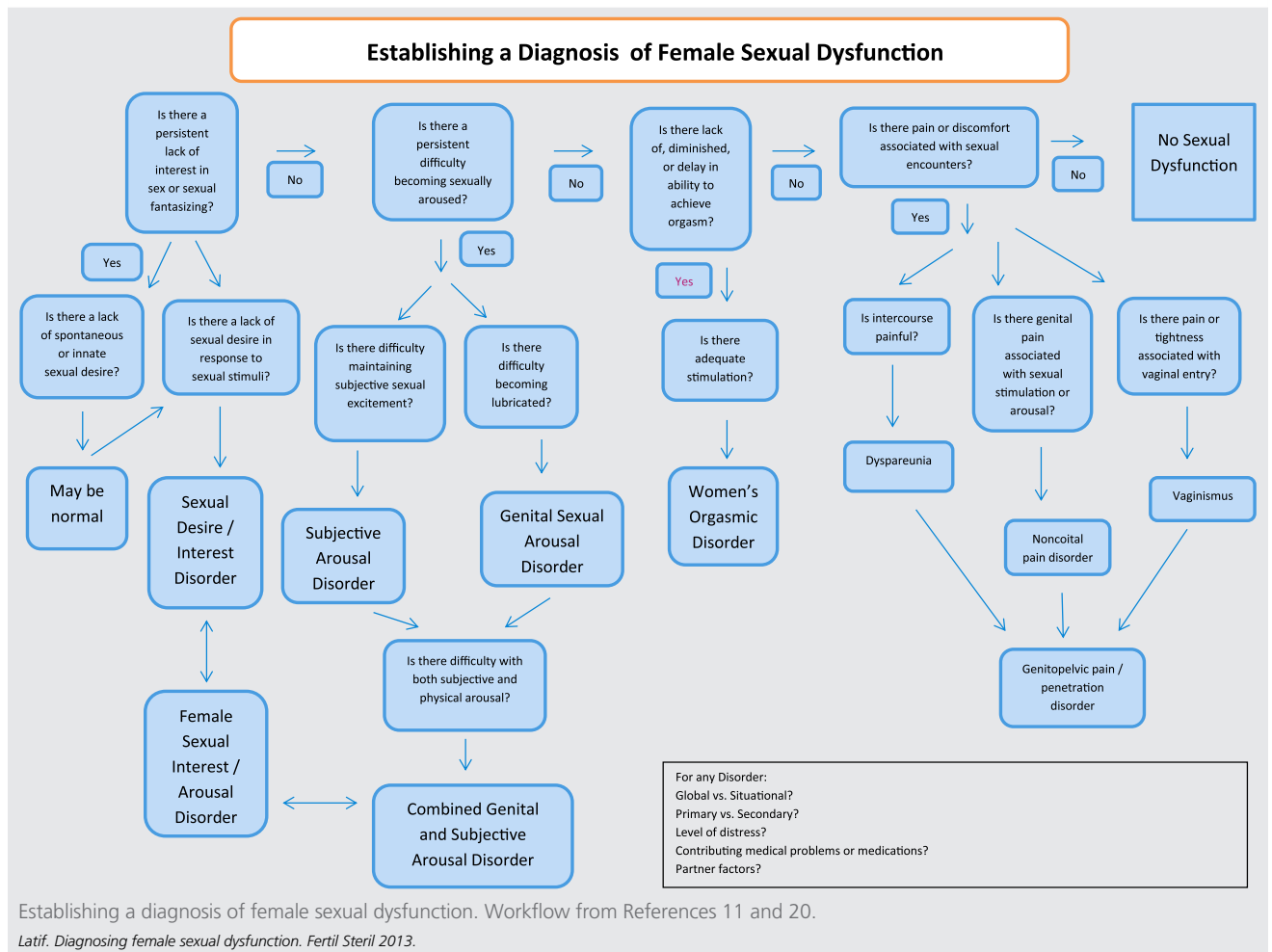
Discussions about sexuality should begin with open-ended questions. If a sexual concern is elicited, a focused sexual and reproductive history should be obtained, as well as the status of current sexual relationships, cultural and personal beliefs about sexuality, and history or sexual trauma. Attention should be paid to elements of the medical and surgical history that may be associated with sexual dysfunctions, as well as any medications (including over-the-counter, herbal, and contraceptives) or substance use that may affect sexual function.

Possibly the most important factor in the diagnosis of a sexual dysfunction of any subcategory is the presence of personal distress caused by the dysfunction. The assessment of personal distress can be made by the clinical interview or standardized questionnaire. Clinicians should query patients about the level of dissatisfaction or concern regarding the sexual difficulty. If a woman is not bothered by her lack of sexual desire or arousal, or if she is sexually satisfied despite an inability to achieve orgasm, then a diagnosis of a sexual dysfunction should not be made. Also, a patient’s partner’s concern or distress over the difficulty is not sufficient to warrant a diagnosis of a sexual dysfunction (19).

The Female Sexual Distress Scale is a 12-item scale that assesses subjective distress associated with sexual dysfunction in women (26). A revised version with an additional 13th question about distress related to low sexual desire was developed to improve discriminative value in women with hypoactive sexual desire (27). Both have been validated and determined to be reliable and consistent in discriminating between women with and without a sexual dysfunction (28).

A complete physical examination, including a focused pelvic examination, is important for identifying pathology

**FIGURE 1**



that could be related to a sexual dysfunction. The pelvic examination is especially important for women with dyspareunia or vaginismus. The examination could reveal vaginal atrophy, infection, vulvar dermatoses, pelvic floor muscle dysfunction, masses, or deep pelvic pain (4). An educational examination can be performed to point out the area(s) causing pain, and vaginal entry can be achieved in progressive stages in the case of vaginismus (11). A normal pelvic examination can also be reassuring and informative to a patient.

Laboratory evaluation is rarely helpful, as there is no reliable correlation between hormone levels and sexual function.

**PHYSIOLOGICAL MEASURES OF SEXUAL FUNCTION**

There are many physiological monitoring parameters of sexual arousal, which could potentially assist in the diagnosis of organic diseases contributing to sexual dysfunctions (12). Recordings at baseline and after sexual stimulation can determine pathological changes that occur with arousal (29).

Genital blood flow can be measured with vaginal photoplethysmography, which is the most widely studied and most

validated physiological instrument used in the study of female sexual function (12). This method uses a vaginal light source on an acrylic tampon to illuminate the vaginal microcirculation, and obtain a measurement of vaginal blood volume to determine the level of vaginal engorgement. Findings have been inconsistent regarding the diagnostic sensitivity of vaginal photoplethysmography, although it seems to be most sensitive when looking at women with specific genital arousal disturbances. Also, there is generally a very low concordance between subjective and physiological arousal in women (11, 30).

Other methods of assessment of genital blood flow have been used in the research setting, including the use of a radioactive tracer (xenon-133), measures of heat dissipation (the oxygen-temperature method), vaginal and labial thermistors for temperature assessment, thermographic photos of the genitals during different phases of the sexual response, duplex Doppler sonography and laser Doppler perfusion imaging of genital blood flow, and magnetic resonance imaging (MRI) (12).

Measurement of vaginal lubrication, volume, pressure, and compliance can also be performed. A neurophysiological examination could evaluate for neurogenic etiologies by

TABLE 3

**Brief sexual symptom checklist for women.**

Please answer the following questions about your overall sexual function:

1. Are you satisfied with your sexual function?  
\_ Yes \_ No  
If No, please continue.
  2. How long have you been dissatisfied with your sexual function?
- 
- 3a. The problem(s) with your sexual function is: (mark one or more)
    - \_ 1 Problem with little or no interest in sex
    - \_ 2 Problem with decreased genital sensation (feeling)
    - \_ 3 Problem with decreased vaginal lubrication (dryness)
    - \_ 4 Problem reaching orgasm
    - \_ 5 Problem with pain during sex
    - \_ 6 Other:
  - 3b. Which problem is most bothersome (circle) 1 2 3 4 5 6
  4. Would you like to talk about it with your doctor?  
\_ Yes \_ No

Note: From reference 22.

Latif. Diagnosing female sexual dysfunction. *Fertil Steril* 2013.

measuring the bulbocavernosus reflex and pudendal evoked potentials, genital sympathetic skin response, warm, cold, and vibratory perception thresholds, and pressure and touch sensitivity of the external genitalia (29). The muscle activity of the pelvic floor and vagina can be assessed with electromyograms and electrovaginograms. Clitoral electromyography has also been looked at (12).

Many of these methods of physiological assessment may be beneficial toward our understanding of female sexual physiology and dysfunctions. However, most are invasive, poorly defined, and lack standardization, validity, and reliability. At this time they are primarily used in the research setting and not in the clinical arena. Physiological end points do have potential value in investigations of drug dosages or mechanisms of action (19).

There is a need for standardization of stimuli used for investigative studies of sexual function. One common stimulus used is the explicit video, although its use has not yet been optimized to account for the immense variability in the nature of the films available. Studies suggest that the content of the film clips are important in optimizing the level of both mental appeal and physical arousal achieved (31). However, it remains to be determined whether mental appeal and/or physical arousal are altered by the age of the viewer, as well as the influence of the age of the video participants on the perceived mental and physical responses.

There would also be a benefit to identification of objective physiological parameters, which could differentiate women with normal sexual function from women with sexual dysfunctions. Such information could complement findings from both the validated sexual function instruments described previously, and diaries of sexual encounters. Collectively, such information could serve to provide an improved capability to diagnose sexual dysfunctions. In addition, identification of pathophysiological differences in women with sexual dysfunctions could provide a “target” for interventions, correction of which might provide a

measurable means of monitoring treatment of sexual dysfunctions.

One possible candidate for a physiological/pathophysiological marker is functional MRI of the brain. Using this technique, multiple studies have now identified specific brain regions at which blood flow is altered in women with a sexual dysfunction during viewing of sexually explicit videos (32). It remains to be determined whether therapeutic interventions would be associated with the return of brain imaging patterns to those of women without a sexual dysfunction, and whether sexual function in these women would return to normal.

In summary, awareness and acceptance of sexuality are increasing among the female population. As acceptance of discussions surrounding sexual practices evolves, physicians become more comfortable taking a sexual history, and patients become more comfortable discussing sexual problems at their office visits, the incidence of diagnosed sexual problems is likely to increase. It is no longer acceptable to many women to merely accept sexual difficulties as a natural result of years of marriage, medical problems, medications, or aging. Women are seeking a diagnosis, which is the first step toward arriving at an appropriate treatment plan. Women want their sex lives back, no matter how old they are. They want to desire sex, they want lubrication, they want orgasm, and they want it pain-free.

## REFERENCES

1. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA* 1999;281:537–44.
2. Shrifen JL, Monz BU, Russo PA, Segreti A, Johannes CB. Sexual problems and distress in United States women: prevalence and correlates. *Obstet Gynecol* 2008;112:970–8.
3. Hayes RD, Bennett CM, Fairley CK, Dennerstein L. What can prevalence studies tell us about female sexual difficulty and dysfunction? *J Sex Med* 2006;3:589–95.
4. Frank FE, Mistretta PM, Will J. Diagnosis and treatment of female sexual dysfunction. *Am Fam Phys* 2008;77:635–42.
5. Potter JE. A 60-year-old woman with sexual difficulties. *JAMA* 2007;297:620–33.
6. Hayes R, Dennerstein L. The impact of aging on sexual function and sexual dysfunction in women: a review of population-based studies. *J Sex Med* 2005;2:317–30.
7. Sexuality in the middle and later life fact sheet. Sexuality information and education counsel of the United States. *SIECUS Report 2001–2002*;30(suppl): 1–6.
8. Masters WH, Johnson VE. *Human sexual response*. Boston: Little-Brown; 1966.
9. Kaplan HS. *Disorders of sexual desire and other new concepts and techniques in sex therapy*. New York: Simon and Schuster; 1979.
10. Basson R. Women’s sexual dysfunction: revised and expanded definitions. *CMAJ* 2005;172:1327–33.
11. Basson R, Wierman ME, van Lankveld J, Brotto L. Summary of the recommendations on sexual dysfunctions in women. *J Sex Med* 2010;7:314–26.
12. Woodard TL, Diamond MP. Physiologic measures of sexual function in women: a review. *Fertil Steril* 2009;92:19–34.
13. Berman JR. Physiology of female sexual function and dysfunction. *Int J Impot Res* 2005;17:S44–51.
14. Wikipedia. Hypoactive sexual desire disorder. Available at: [http://en.wikipedia.org/wiki/Hypoactive\\_sexual\\_desire\\_disorder](http://en.wikipedia.org/wiki/Hypoactive_sexual_desire_disorder). Accessed May 21, 2013.
15. American Psychiatric Association. *DSM-III: Diagnostic and statistical manual of mental disorders*. 3rd ed. Washington, DC: American Psychiatric Press; 1980.

16. World Health Organization. ICD-10: International statistical classification of diseases and related health problems. Geneva: World Health Organization; 1992.
17. Graham CA. The DSM diagnostic criteria for female sexual arousal disorder. *Arch Sex Behav* 2010;39:240–55.
18. American Psychiatric Association. DSM-IV-tr: Diagnostic and statistical manual of mental disorders, 4th ed., text-revision. Washington, DC: American Psychiatric Press; 2000.
19. Basson R, Berman J, Burnett A, Derogatis L, Ferguson D, Fourcroy J, et al. Report of the international consensus development conference on female sexual dysfunction: definitions and classifications. *J Urol* 2000;163:888–93.
20. American Psychiatric Association. Highlights of changes from the DSM-IV-TR to DSM-5. Washington, DC: American Psychiatric Press; 2013.
21. Bachmann G. Female sexuality and sexual dysfunction: are we stuck on the learning curve? *J Sex Med* 2006;3:639–45.
22. Hatzichristou D, Rosen RC, Derogatis LR, Low WY, Meuleman EJH, Sadovsky R, et al. Recommendations for the clinical evaluation of men and women with sexual dysfunction. *J Sex Med* 2010;7:337–48.
23. Taylor JF, Rosen RC, Leiblum SR. Self-report assessment of female sexual function: psychometric evaluation of the Brief Index of Sexual Functioning for Women. *Arch Sex Behav* 1994;23:627–43.
24. Clayton AH, Goldfischer E, Goldstein I, DeRogatis L, Nappi R, Lewis-D'Agostino DJ, et al. Validity of the decreased sexual desire screener for diagnosing hypoactive sexual desire disorder. *J Sex Marital Ther* 2013;39:132–43.
25. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The female sexual function index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000; 26:191–208.
26. DeRogatis LR, Rosen R, Leiblum S, Burnett A, Heiman J. The female sexual distress scale (FSDS): initial validation of a standardized scale for assessment of sexually related personal distress in women. *J Sex Marital Ther* 2002;28: 317–30.
27. DeRogatis L, Clayton A, Lewis-D'Agostino D, Wunderlich G, Yali Fu. Validation of the female sexual distress scale-revised for assessing distress in women with hypoactive sexual desire disorder. *J Sex Med* 2008;5:357–64.
28. Rosen RC. Assessment of female sexual dysfunction: review of validated methods. *Fertil Steril* 2002;77(Suppl. 4):S89–93.
29. Marthol H, Hilz MJ. Female sexual dysfunction: a systematic overview of classification, pathophysiology, diagnosis, and treatment. *Fortschr Neurol Psychiatr* 2004;72:121–35.
30. Meston CM, Rellini AH, McCall K. The sensitivity of continuous laboratory measures of physiological and subjective sexual arousal for diagnosing women with sexual arousal disorder. *J Sex Med* 2010;7:938–50.
31. Woodard TL, Collins K, Perez M, Balon R, Tancer ME, Kruger M, et al. What kind of erotic film clips should we use in female sex research? An exploratory study. *J Sex Med* 2007;5:146–54.
32. Woodard TL, Nowak NT, Balon R, Tancer M, Diamond MP. Brain activation patterns in women with acquired hypoactive sexual desire disorder and women with normal sexual function: A cross-sectional pilot study. *Fertil Steril*. 2013. doi: 10.1016/j.fertnstert.2013.05.041.