# Female sexual pain: Evaluation

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## INTRODUCTION

Female sexual pain (FSP) has a significant negative impact on a woman's health, self-esteem, relationships, quality of life, and work productivity. It is unclear if sexual pain is a sexual disorder, pain disorder, or both. It can be difficult to identify a definitive cause of pain. Etiologies range from simple anatomic problems to complex biopsychosocial issues. In addition, a woman can have more than one etiology of her pain.

This topic will review the epidemiology, etiology, and diagnostic evaluation of women who present with genital sexual pain. The differential diagnosis of sexual pain as well as the evaluation and treatment of specific pain disorders are reviewed separately.

- (See "Female sexual pain: Differential diagnosis".)
- (See "Genitourinary syndrome of menopause (vulvovaginal atrophy): Clinical manifestations and diagnosis".)
- (See "Genitourinary syndrome of menopause (vulvovaginal atrophy): Treatment".)
- (See "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)".)
- (See "Treatment of vulvodynia (vulvar pain of unknown cause)".)
- (See "Overview of sexual dysfunction in women: Epidemiology, risk factors, and evaluation".)
- (See "Overview of sexual dysfunction in women: Management".)

## TERMINOLOGY

FSP is vulvovaginal or pelvic pain that is provoked by or exacerbated during sexual contact [1,2]. Sexual pain can be mild to severe, generalized or localized, lifelong or acquired, and idiopathic or secondary [3]. The pain can be present for any amount of time. FSP encompasses identifiable conditions that cause genital pain (eg, endometriosis, genitourinary syndrome of menopause, dermatoses) as well as generalized pain disorders such as pains with sexual activity, dyspareunia (pain with penetrative intercourse), vulvodynia (persistent vulvar pain of without an identifiable etiology), and vaginismus (difficulty in allowing vaginal penetration despite willingness to do so) [1,4].

## CLASSIFICATION

Multiple classification systems have been proposed to define FSP [5-7]. One challenge for classification is that sexual dysfunction has typically been viewed as being either psychiatric or medical when, in reality, both factors have a role [8]. This duality is reflected by the simultaneous use of two official systems with international influence: the Diagnostic and Statistical Manual of Mental Disorders, 5$^{th}$ edition [3] and the World Health Organization's International Classification of Diseases, 10$^{th}$ revision [9].

In 2015, in attempt to standardize the definitions to facilitate research and communication, the Fourth International Consultation on Sexual Medicine (ICSM) reviewed the existing systems and classified FSP as female genital-pelvic pain dysfunction [2]. Women with genital-pelvic pain dysfunction must have persistent or recurring challenges with at least one of the following:

- Pain with vaginal penetration
- Marked vulvovaginal or pelvic pain during genital contact (ie, genital sexual pain)
- Marked fear or anxiety about vulvovaginal or pelvic pain in anticipation of, during, or as a result of genital contact
- Marked hypertonicity of overactivity of pelvic floor muscles with or without genital contact (ie, vaginismus)

## EPIDEMIOLOGY

**Incidence and prevalence** — Reported incidence and prevalence estimates for female sexual dysfunction and pain are challenging to determine as they vary with culture, patient age, definition of sexual dysfunction or pain, study design, and outcome measures [10-12]. The

incidence of female sexual dysfunction, which includes FSP, has been reported to range from 6 to 40 percent [13-15]. A systematic review of 54 studies reported the incidence of painful intercourse, one type of FSP, ranged from 8 to 22 percent [16], while the prevalence of painful intercourse has been reported to range from 1 to 27 percent [17-20].

**Risk factors** — The biopsychosocial model suggests that risks factors for sexual dysfunction include biological, psychological, and sociocultural factors. The risk factors also vary with the type of FSP. Examples include:

- Dyspareunia – Risk factors for dyspareunia include pelvic inflammatory disease, depression, anxiety, history of sexual abuse (as a child, adult, or both), Black race, peri- or postmenopausal status, and age <50 [21,22]. Although menopausal status and age <50 years appear to be somewhat exclusive, the study did not further elucidate these findings.

- Vulvodynia – Risk factors for vulvodynia, persistent vulvar pain without an identifiable etiology, include anxiety and depression [23]. It is not known how these illnesses contribute to FSP. Some questionnaire studies suggest both childhood sexual and physical abuse are risk factors for the development of vulvodynia and sexual pain [24,25]. The mechanism by which early childhood victimization and trauma may contribute to the modulation of pain is not yet understood. However, at least one other study has reported that rates of sexual and physical abuse are no different among women diagnosed with vulvodynia, women with persistent vulvar pruritus, and healthy controls [26].

## ETIOLOGY

Sexual pain has many causes. Similar to the classification system for vulvar pain [6], women with FSP can be grouped into those with an identifiable cause of their symptoms and those with idiopathic FSP. For women with FSP related to a specific cause, the pathogenesis of pain is related to that diagnosis. Women with FSP and no identifiable cause appear to have a type of chronic pain syndrome. Women can have both identified and idiopathic FSP.

### Identifiable

- **Anatomic** – Anatomic causes of FSP include myofascial pelvic pain syndrome, and, less often, müllerian anomalies and pelvic organ prolapse. The vulvar vestibule has nonvisceral innervation, similar to cutaneous tissue [27]. The most sensitive portion of the vagina is the area contiguous with the vestibule because the distal vagina has a greater number of pain fibers than the proximal vagina [28]. The mechanism by which myofascial pelvic pain syndrome causes pain is presented separately. (See "Clinical manifestations and diagnosis

of vulvodynia (vulvar pain of unknown cause)" and "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women" and "Congenital uterine anomalies: Clinical manifestations and diagnosis" and "Congenital anomalies of the hymen and vagina" and "Sexual function in women with pelvic floor and lower urinary tract disorders".)

- **Infectious** – While any pelvic infection can result in FSP, common infectious conditions include candidiasis, sexually transmitted infections (eg, gonorrhea, chlamydia, and herpes simplex virus), pelvic inflammatory disease, and urinary tract infection. The presentation and diagnosis of each of these entities is presented separately. (See "Approach to females with symptoms of vaginitis" and "Acute cervicitis" and "Pelvic inflammatory disease: Clinical manifestations and diagnosis" and "Acute simple cystitis in women".)

- **Hormonal** – Alterations in hormone levels can contribute to the development of FSP. All lower genital tract tissues have estrogen and androgen receptors; the highest receptor concentrations are found in the vagina and vestibule.

  - For estrogenized women, use of estrogen-progestin or progestin-only contraceptives can result in low circulating estradiol and androgen levels and contribute to poor lubrication, dryness, and introital inflammation [29,30]. In addition, endometriosis and the resulting inflammation, fibrosis, and adhesion formation can cause chronic pain as well as deep pelvic pain with sexual activity. (See "Endometriosis: Pathogenesis, clinical features, and diagnosis", section on 'Patient presentation'.)

  - For hypoestrogenic women, genitourinary syndrome of menopause is the most common cause of sexual pain. Estrogen is responsible for the thickness and elasticity of the vaginal mucosa and facilitates healthy secretions, which enable expansion and elongation of the vagina during sexual arousal. In addition, estrogen is critical for maintaining the overall integrity of the vaginal tissue. It is estimated that at least 50 percent of postmenopausal women have vaginal atrophy as a result of decreased estrogen levels. (See "Genitourinary syndrome of menopause (vulvovaginal atrophy): Clinical manifestations and diagnosis" and "Genitourinary syndrome of menopause (vulvovaginal atrophy): Treatment".)

- **Trauma** – Trauma, including obstetric perineal injury, obstetric surgery, gynecologic surgery, and traumatic perineal injury, can result in FSP. The presumed mechanism is tissue injury and development of a chronic pain pathway. (See "Female genital cutting (circumcision)".)

- **Inflammatory** – Inflammatory disorders that can cause FSP include lichen sclerosus, lichen planus, lichen simplex chronicus, inflammatory bowel disease, and Sjögren's syndrome [4].

(See "Vulvar dermatitis" and "Clinical manifestations, diagnosis, and prognosis of Crohn disease in adults" and "Clinical manifestations, diagnosis, and prognosis of ulcerative colitis in adults" and "Clinical manifestations of Sjögren's syndrome: Extraglandular disease".)

- **Neoplastic** – Although pelvic malignancies do not typically present with FSP as the main concern, any pelvic malignancy (ie, gynecologic, gastroenterologic, or urologic) or treatment for malignancy (eg, surgery, radiation therapy, or hormonal blockade) can result in sexual pain, presumably through tissue injury and development of a chronic pain syndrome. (See "Vulvar cancer: Epidemiology, diagnosis, histopathology, and treatment" and "Invasive cervical cancer: Epidemiology, risk factors, clinical manifestations, and diagnosis" and "Treatment-related toxicity from the use of radiation therapy for gynecologic malignancies".)

- **Neurologic** – Neurologic diseases associated with FSP include multiple sclerosis, Parkinson's disease, pudendal and other peripheral neuropathies, fibromyalgia, and chronic pain syndromes [4,31,32]. While these disorders are associated with pain, neurologic disease may not be the sole cause of pain, and these women are evaluated for additional causes of their symptoms. (See "Manifestations of multiple sclerosis in adults", section on 'Pain' and "Clinical manifestations of Parkinson disease", section on 'Pain' and "Clinical manifestations and diagnosis of fibromyalgia in adults".)

- **Psychosocial** – In women without a history of abuse, women who have regularly experienced pain during intercourse can report a marked fear or anxiety about FSP [3]. This appropriate reaction to pain may lead to avoidance of sexual activity. Other women can have a fear or anxiety response without having had a history of pain itself. Such fear can also lead to voluntary, or involuntary, tensing of the vaginal muscles that results in pain with vaginal penetration (ie, vaginismus). In addition, psychiatric illnesses such as depression and anxiety are independently associated with chronic pain, including sexual pain [33]. (See "Management and sequelae of sexual abuse in children and adolescents", section on 'Sequelae' and "Intimate partner violence: Diagnosis and screening".)

- **Relationship** – Relationship stressors can both cause or contribute to FSP. Common stressors include poor communication, discrepancies in desire for sexual activity, and conflict (eg, verbal, physical, or sexual abuse) [3,4]. In addition, FSP alone can cause relationship discord and thereby perpetuate the problem.

**Idiopathic** — Women with FSP without an identifiable cause, or who have persistent pain after the identified cause has been treated, are presumed to have a chronic pain syndrome.

Worsening pain may derive from interplay between local sensory input and the biochemistry of systemic physical or emotional stimuli [34].

Specific attributes of the pelvis that may contribute to the development of a chronic pain syndrome include:

- The vulvar vestibule, urethra, and bladder have a common embryologic origin, which may explain pain occurrence at more than one site [35].
- Tissues of the lower genital tract share common neurologic pathways. For example, the vulva and vestibule are both innervated by the pudendal nerve [36].
- Afferent nerves from the reproductive, urinary, and gastrointestinal tracts impinge upon the same spinal segments served by nerves from the skin and muscles from the back, abdomen, and pelvis. This anatomy could explain some clinical patterns of pain and the sensation of cutaneous pain in response to visceral stimuli [34,37].
- Myelinated A-delta fibers nociceptive (conduct the immediate sensation of sharp pain) are prevalent in the vestibule. Unmyelinated C fibers (mediate delayed and longer-lasting pain, typically characterized as dull) are present in the vestibule, vagina, and cervix.

## CLINICAL MANIFESTATION

Pain with genital sexual contact is the hallmark symptom of women with FSP. Common sites of pain include the vulva, vaginal vestibule, introitus, vagina, pelvis, or pelvic floor ( figure 1) [4,38]. Women with FSP can also report the following pain characteristics [3]:

- Location: The pain can be isolated to one location or appreciated at multiple sites.
- Onset: Sexual pain may be lifelong (ie, pain present since the individual became sexually active) or acquired (ie, the pain began after a relatively normal period of sexual function).
- Frequency: Pain may be constant (with each sexual event and activity) or situational (with some experiences or partners but not others).

## DIAGNOSTIC EVALUATION

**Our approach** — All women with sexual pain undergo a detailed history and physical examination. The purpose of the history is to evaluate for possible physical, sexual, and psychosocial origins of pain, as sexual pain is often multifactorial [39,40]. During physical

examination, the pain is mapped and the anatomy is inspected for possible causes of the symptoms. The results of the history and physical examination guide the selection of laboratory or imaging studies. Some women then undergo further diagnostic procedures.

It is the responsibility of the health care provider to initiate a conversation about sexual concerns because the woman may be reluctant to discuss sexual problems for fear of patronization, judgement, or dismissal [38]. Communication skills that enhance openness, comfort, trust, and confidence are especially important. We find the PEARLS model of communication helpful when beginning a conversation about sexual health ( table 1) [41]. Additional elements that enhance patient communication are a confidential environment and adequate time to discuss the problem and answer questions. Clinicians should not make assumptions about sexual orientation or practices.

**Indications for prompt referral** — While most clinicians can initiate the evaluation and treatment of most women with FSP, a few diagnoses warrant prompt referral to a specialist for evaluation and treatment. We advise referral of women suspected of having the following issues:

- Current unsafe relationship (see "Intimate partner violence: Diagnosis and screening" and "Intimate partner violence: Intervention and patient management")
- Graft versus host disease of the genital tissue (see "Clinical manifestations, diagnosis, and grading of acute graft-versus-host disease" and "Clinical manifestations, diagnosis, and grading of chronic graft-versus-host disease", section on 'Genitalia')
- Female genital cutting or circumcision (see "Female genital cutting (circumcision)")
- Vulvar dermatoses, if the clinician is not familiar with the diagnosis or treatment (see "Vulvar lesions: Differential diagnosis of vesicles, bullae, erosions, and ulcers")

Once the acute issues above have been addressed, women with persistent FSP proceed through the history and physical examination process outlined below.

**History** — The history includes a comprehensive review of systems, detailed gynecologic history, and sexual pain history to characterize the patient's pain and identify potential specific causes of FSP [39,40]. Our approach to the history is outlined below. In addition, the International Pelvic Pain Society has developed history and physical examination forms for evaluation of women with chronic pelvic pain of any etiology. Alternatives include the validated Female Sexual Function Index ( table 2), the Global Measure of Sexual Satisfaction Scale, and the Female Sexual Distress Scale [42-44].

**Pain** — We use the following questions to gain understanding about the woman's pain:

- **When does the pain occur?** – We ask questions to determine the timing of onset and association of the pain with other activities. Questions that we ask include:
  - Does the pain occur with foreplay but before genital touch? If so, the pain may be related to generalized vulvodynia or anxiety with sexual contact. (See "Overview of sexual dysfunction in women: Epidemiology, risk factors, and evaluation".)
  - Does the pain occur at the very beginning of penetration? If so, the pain may be related to provoked vestibulodynia or an active vaginal infection. (See "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)" and "Candida vulvovaginitis: Clinical manifestations and diagnosis" and "Bacterial vaginosis: Clinical manifestations and diagnosis".)
  - Does the pain occur with deep pelvic thrusting? If so, the pain may be related to pelvic floor muscle dysfunction, pelvic inflammatory disease, painful bladder syndrome or interstitial cystitis, endometriosis, or inflammatory bowel syndromes. (See "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women" and "Long-term complications of pelvic inflammatory disease" and "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis" and "Definitions, epidemiology, and risk factors for inflammatory bowel disease in adults".)
  - Does the pain occur after sex? If so, it may be related to vestibulodynia, vulvar fissures, or other dermatoses. (See "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)" and "Vulvar lichen sclerosus" and "Vulvar dermatitis" and "Vulvar lichen planus".)
  - Does the pain happen at other nonsexual times? If so, the pain may be related to generalized vulvodynia, pelvic floor dysfunction, or pudendal neuralgia. (See "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women" and "Nerve injury associated with pelvic surgery" and "Nerve injury associated with pelvic surgery", section on 'Pudendal nerve'.)
- **Where is the pain located?** – We ask the woman questions to identify the location of pain. We use an anatomic drawing as a visual aid ( figure 1). Alternately, the woman can point to the concerning regions during the physical examination; this approach can be helpful for the woman who is unable to localize the pain and responds that "everything hurts." Questions that we ask include:

- Is the pain on the vulva (labia majora, labia minora, interlabial sulci, clitoral or periclitoral, or in the vestibule)? Pain in these locations may reflect lichen dermatoses, contact dermatitis, or generalized vulvodynia. (See "Vulvar lichen sclerosus" and "Vulvar lichen planus" and "Irritant contact dermatitis in adults" and "Clinical manifestations and diagnosis of fibromyalgia in adults".)

- Is the pain perineal or perianal? Pain in these locations may be related to nerve entrapment, fissures, or dermatoses in addition to vulvodynia. (See "Nerve injury associated with pelvic surgery", section on 'Pudendal nerve' and "Vulvar lichen planus" and "Vulvar lichen sclerosus".)

- Is the pain at the entry (introital) or other parts of the vagina? Introital or vaginal pain can be caused by vulvar pain syndrome or infection. (See "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)" and "Candida vulvovaginitis: Clinical manifestations and diagnosis" and "Bacterial vaginosis: Clinical manifestations and diagnosis".)

- Is the pain in the pelvis (ie, deep dyspareunia)? (See "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women" and "Long-term complications of pelvic inflammatory disease" and "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis" and "Definitions, epidemiology, and risk factors for inflammatory bowel disease in adults".)

- **Was the onset of pain associated with a specific event?** – We specifically inquire about:

  - Childbirth (including episiotomy, lacerations, lactation)
  - Pelvic or vaginal surgery (particularly placement of synthetic vaginal mesh)
  - Back or hip injury
  - Physical trauma (eg, motor vehicle accident)
  - Reconstructive surgery for incontinence or pelvic organ prolapse
  - Radiation therapy and chemotherapy treatment

  These processes can cause nerve injury or scarring that can result in pain. In addition, an adverse experience can all lead to remembered pain. (See "Clinical manifestations, prevention, and treatment of radiation-induced fibrosis", section on 'Genitourinary tract' and "Management of early-stage cervical cancer", section on 'Sexual dysfunction'.)

- **What is the character and pattern of the pain?** – Is it a sharp or burning or tingling sensation? For how long does each episode last? How severe is it? We use a visual analog scale that can help the woman quantify her pain ( figure 2).

We also inquire how the pain changes during the menstrual cycle. Cyclic symptoms of deep dyspareunia may indicate the presence of endometriosis. (See "Endometriosis: Pathogenesis, clinical features, and diagnosis", section on 'Clinical manifestations'.)

- **Does the pain occur or worsen when you are sitting or exercising?** – This may reflect pudendal nerve dysfunction or pudendal neuralgia. (See "Female sexual pain: Differential diagnosis", section on 'Pudendal neuralgia' and "Approach to hip and groin pain in the athlete and active adult", section on 'Neuropathies'.)

- **What have you tried to relieve the pain?** – We inquire about evaluations and treatments, including self-initiated (eg, vaginal lubricant, position changes), that the patient has tried. We ask what has helped and what has not.

**Sexual**

- **Was there a period of pain-free, enjoyable genital sexual activity followed by the development of the pain?** – Ask the patient follow-up questions to create a timeline from pain-free sexual activity to the development of pain. Lifelong sexual pain can reflect a congenital anomaly or undiagnosed or untreated vulvovaginal disorders (eg, lichen sclerosus) with architectural changes and/or scarring of the introitus. (See "Congenital anomalies of the hymen and vagina" and "Vulvar lichen sclerosus".)

- **What has happened since the pain started?** – We inquire if the pain has continued with every sexual encounter and with subsequent partners. This information can help identify specific partners or sexual practices that contribute to the pain. We also ask if the woman avoids sexual activity because of the pain. Avoidance of sexual contact indirectly reflects the magnitude of her symptoms and can also contribute to relationship stress, which can further worsen pain. If the woman is able to tolerate sexual activity despite the pain, we ask how often and in which circumstances she has been able to do so. Some women engage in anal intercourse to avoid vaginal intercourse. In addition, we ask if the patient finds any topical lubricants, alcohol consumption, or drug consumption helpful.

- **Tell me about you first sexual experience.** – We discuss the patient's first sexual experience. We explain to patients that we find the following questions helpful because, in our clinical experience, inadequate development of intimate relationships and poor sexual technique, or actual trauma, can lead to remembered pain and tightening of the pelvic floor with every subsequent episode.

    - Had she known the partner long enough to develop a relationship?
    - Was sex desired? Was she stimulated, aroused, and lubricated for sex?

- Did she have pain? Was the pain more than she expected?
- Was complete penetration attempted/possible?

**Relationship**

- **How would you describe your relationship with your partner(s)? Is there anything you would like to discuss with me?** – This area of questioning can be particularly personal and upsetting to a patient. Some women may find it surprising that the clinician is delving into this emotional area. We explain that understanding this part of her experience is extremely important to improving her sexual health. Women with significant relationship stress can benefit from referral to a relationship counselor or sexual therapist. Questions that we find helpful include:

  - Are there any sexual or relationship concerns between you and your partner?
  - Does your partner believe that your pain is real?
  - Is there adequate sexual knowledge and technique?
  - What is your partner's response to the alterations in your sexual frequency/behavior?

- **Are you safe in your current relationships? Have you ever been abused?** – Sexual abuse has been associated with the development of chronic pelvic pain and sexual pain disorders [21,24]. Globally, 30 percent of women have experienced physical or sexual violence by an intimate partner [45]. Therefore, we screen all women for intimate partner violence. Women who are currently unsafe are referred for immediate intervention. Once the woman is safe, she can be fully evaluated for other etiologies of sexual pain. (See "Intimate partner violence: Diagnosis and screening" and "Intimate partner violence: Intervention and patient management".)

  While screening for intimate partner violence or past violence is an important aspect of the sexual pain evaluation, it is important to remember that trauma comes in many forms .As an example, conflict over bladder or bowels during childhood can lead to lifelong dysfunctional voiding or chronic constipation with associated pelvic floor hypertonicity, spasm, and dyspareunia [46].

**Additional gynecologic and medical issues** — In addition to the above questions, we take focused gynecologic and medical histories to identify all possible factors contributing to sexual pain. Components of the gynecologic history are presented in detail separately. (See "The gynecologic history and pelvic examination", section on 'Basic history'.)

We specifically inquire about the following systems and diagnoses:

- **Urologic** – Infectious cystitis and interstitial cystitis/bladder pain syndrome can cause deep midline dyspareunia. Urethral disorders (diverticulum, urethritis, cyst) can cause pain during vaginal penetration or thrusting. (See "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis" and "Urethral diverticulum in women".)

- **Gastrointestinal** – Any inflammatory bowel process (eg, diverticulitis, Crohn disease, ulcerative colitis) can cause sexual pain. Crohn disease can also present with knife-slit vulvar lesions that can be an independent source of pain ( picture 1). Other intestinal dysfunction, such as irritable bowel syndrome or chronic constipation, can impair the pelvic floor muscle function and result in pain. (See 'Identifiable' above and "Clinical manifestations, diagnosis, and prognosis of ulcerative colitis in adults" and "Clinical manifestations, diagnosis, and prognosis of Crohn disease in adults".)

- **Musculoskeletal** – We inquire about joint or muscle pain, limited mobility, injuries, falls, chronic low back pain, degenerative disc or joint disease, hip pain, and altered gait. All of these can contribute to pelvic floor muscle hypertonus or dysfunction which in turn contribute to FSP. (See "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women".)

- **Dermatologic** – We inquire about a history of dermatitis, including skin conditions that can affect the vulva such as eczema, allergies, and contact dermatitis. We ask about use of over-the-counter feminine products, soaps, cleansing wipes, and similar products that can result in drying and irritation of the vulva. Some women develop a contact dermatitis. (See "Clinical features and diagnosis of allergic contact dermatitis".)

- **Vascular** – Sexual dysfunction appears to occur more frequently in hypertensive women. It is unclear whether this is associated with the hypertension itself or with antihypertensive medications. (See "Overview of sexual dysfunction in women: Epidemiology, risk factors, and evaluation", section on 'Hypertension'.)

  Deep dyspareunia has also been attributed to pelvic congestion syndrome [47]. (See "Vulvovaginal varicosities and pelvic congestion syndrome", section on 'Pelvic congestion syndrome'.)

- **Cultural factors** – By asking open-ended questions, such as "Tell me a little about your family, cultural, and religious background so that I can best take care of your sexual concerns," we inquire about cultural and religious factors that may impact the woman's sexual function or expectations. (See "Cross-cultural care and communication".)

- **Medication and over-the-counter products** – Medications can cause decreased sexual arousal or vulvovaginal dryness that may, in turn, result in dyspareunia ( table 3). Mechanisms include hypoestrogenism, increased risk of recurrent candidal vulvovaginitis, or other negative skin effects. We inquire about all medication, including prescription and over-the-counter drugs, and supplements that a woman is taking.

**Physical examination**

**Patient comfort** — Many women with sexual pain disorders have significant anxiety regarding the pelvic examination. Explaining the order and purpose of the examination components can help to alleviate anxiety and confusion. Educating the woman that the clinician may have to reproduce the pain in order to accurately identify, diagnose, and treat her pain can help her to understand the clinician's motivation.

Before the examination, the clinician asks the patient about previous experiences with the pelvic examination and obtains verbal consent. Other preemptive measures to reduce anxiety and discomfort include:

- Establish an agreement with the patient that the examination will be stopped upon her request. Proceeding with the examination in a reluctant patient can exacerbate previous trauma.
- Ask the woman if she would like to bring a support person or electronic device (eg, music or video player) to the examination.
- Offer the patient a hand mirror so she can observe the examination as it is performed and potentially learn the architecture of her anatomy.
- Ask the patient if she would prefer to complete the examination over several visits.
- Discuss pretreatment with an anxiolytic such as a benzodiazepine. Women who are premedicated are advised not to drive to or from the appointment.
- Refer the woman to a therapist, mind-body program, or cognitive behavioral program if she feels these treatments would expand her coping skills. (See "Overview of psychotherapies".)

**External genitalia** — The examination of the external genitalia consists of pressure-point testing, visual inspection, and palpation. Pressure-point testing is performed first so that the findings are not distorted by the palpation portion of the examination.

- **Pressure-point testing** – In pressure-point testing, the clinician systematically touches the woman's external anatomy with a moistened cotton swab and assesses for pain or other abnormal sensations ( figure 1 and figure 3) [48]. Assessment occurs in the following order:

  - Medial thigh, buttocks, and mons pubis, which are typically nontender.
  - Labia majora, prepuce and clitoris, labiocrural folds, interlabial sulci, and labia minora.
  - Vulvar vestibule. The patient should be notified before testing the vulvar vestibule because this area is a common source of pain. The vestibule is examined in a clockwise fashion with the cotton swab from the clitoral frenulum in its anterior trigone, around circumferentially within Hart's line, imagining the face of a clock ( picture 2).

  The patient's permission is requested before moving to each area unless the examiner is trying to assess for the loss of sensation in addition to pain. At each test site, the sensation is graded using a 10-point visual analog pain scale ( form 1). With the cotton swab, the clinician also assesses the clitoris and bulbocavernosus reflexes (to assess function or dysfunction of the sacral nerve roots) and notes if the response is exaggerated, minimized, or absent. In addition, the clinician visually assesses the appearance of all the tissues at the time of pain mapping. Findings suggestive of localized vulvar pain syndrome include can include erythema and pain out of proportion to touch in the vulvar vestibule, but it is important to note that erythema is not required for the diagnosis of localized vulvar pain syndrome. (See "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)", section on 'Physical examination'.)

- **Visual inspection** – Separation of the labia majora allows inspection of the labia minora, vulvar vestibule, hymenal membrane, and vaginal introitus. The examiner evaluates for labial lesions (eg, ulcerations, fissures), labial hypertrophy, vaginal agenesis, and imperforate hymen. If available, use of a colposcope (without acetic acid) to magnify the vulva may provide more detailed information. (See "Vulvar lesions: Diagnostic evaluation" and "Vulvar dermatitis" and "Labia minora hypertrophy" and "Congenital anomalies of the hymen and vagina" and "Clinical manifestations and diagnosis of vulvodynia (vulvar pain of unknown cause)".)

- **Palpation** – Lastly, all tissues are palpated to assess for masses or pain. Proceeding with gentle manipulation of the tissues that appear normal on visual inspection can identify findings such as small fissures, masses (eg, neuroma), tender scars, and adhesions that may not have been seen.

**Vagina and cervix** — The speculum examination of the vagina and cervix can be extremely stressful for women with FSP and thus may require a separate visit to complete. A variety of speculum shapes and sizes should be available to maximize the patient's comfort; a pediatric Grave's or narrow Pederson speculum can be extremely helpful. Prior to the examination, the speculum is warmed and lubricated (water can be used for women with sensitivity to lubricants). A medical assistant can facilitate the collection and labeling of any samples and can thereby make the examination proceed more quickly.

Women with introital pain can benefit from a topical anesthetic (eg, lidocaine ointment, not to exceed a maximum dose of 5 gm per application) applied to the introitus approximately 10 minutes prior to the speculum examination. Point-pressure testing is completed prior to application of any anesthetic agent. If topical anesthetic is unavailable, or if it causes burning and needs to be removed, then the clinician should avoid touching the vestibule during speculum insertion. (See "The gynecologic history and pelvic examination", section on 'Speculum examination'.)

Once the speculum has been placed in the vagina, the vagina is evaluated for the following:

- Structural anomalies such as a vaginal septum (transverse or longitudinal) or duplicated cervix. (See "Congenital anomalies of the hymen and vagina" and "Benign cervical lesions and congenital anomalies of the cervix" and "Benign cervical lesions and congenital anomalies of the cervix", section on 'Congenital abnormalities'.)

- Vaginal discharge that could represent an infectious or inflammatory etiology. (See "Approach to females with symptoms of vaginitis" and "Candida vulvovaginitis: Clinical manifestations and diagnosis" and "Desquamative inflammatory vaginitis".)

- Vaginal atrophy that can result from hormonal changes such as menopause or radiation treatment. (See "Genitourinary syndrome of menopause (vulvovaginal atrophy): Clinical manifestations and diagnosis" and "Treatment-related toxicity from the use of radiation therapy for gynecologic malignancies", section on 'Vagina'.)

- Cervical discharge, which could result from cervical or uterine infection. (See "Acute cervicitis" and "Pelvic inflammatory disease: Clinical manifestations and diagnosis".)

- Cervical lesions. (See "Benign cervical lesions and congenital anomalies of the cervix", section on 'Noncystic lesions' and "Benign cervical lesions and congenital anomalies of the cervix", section on 'Premalignant and malignant lesions'.)

- Prolapse of the anterior, apical, and posterior vaginal compartments. (See "Pelvic organ prolapse in women: Epidemiology, risk factors, clinical manifestations, and management".)

**Abdominal, bimanual, and rectovaginal** — The final stages of examination include the abdominal, bimanual, and rectovaginal examinations. (See "The gynecologic history and pelvic examination", section on 'Components of the examination'.)

- We assess the abdominal wall for localized pain. (See "Anterior cutaneous nerve entrapment syndrome".)

- A single-digit examination is performed of the vagina, urethra, bladder, and pelvic floor to assess for abnormal contraction, masses (eg, urethral diverticulum), tenderness, and myofascial trigger points. (See "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis" and "Clinical manifestations and diagnosis of myofascial pelvic pain syndrome in women".)

- Bimanual examination and rectovaginal examinations are performed with two digits to evaluate the pelvic floor muscles (ability to contract and relax), vaginal fornices, rectovaginal septum, cervix, uterus, uterosacral ligaments, and adnexa. Findings that can contribute to sexual pain include pelvic floor muscle trigger points and hypertonicity, leiomyomas, adnexal masses or cysts, nodularity of the uterosacral ligaments or rectovaginal septum suggestive of endometriosis, and fixation of pelvic organs from adhesions.

- The pudendal nerve is assessed as it traverses the pelvic floor at Alcock's canal if there is evidence in the history of potential neuralgia, compression, or entrapment. Pudendal nerve pain is suggested by a history of unilateral pain with prolonged sitting that is relieved with lying supine or by physical examination finding of tenderness with palpation of the obturator internus muscle or Alcock's canal (the space between the sacrospinous and sacrotuberous ligaments [49].

**Additional sites** — Women with symptoms and examination findings suggestive of systemic disease undergo examination of the relevant anatomy. For example, a complete skin examination is performed in women with vulvar lesions that could represent systemic illnesses such as psoriasis, lichen sclerosus, lichen planus, or Behçet syndrome. (See "Approach to the clinical dermatologic diagnosis".)

**Laboratory evaluation** — While FSP does not cause pathognomonic laboratory abnormalities, laboratory evaluation is helpful in confirming or excluding specific etiologies that can cause sexual pain.

- Women with vaginal or cervical discharge undergo measurement of vaginal pH, microscopy, and testing for sexually transmitted infections, if appropriate. This test combination can distinguish among bacterial vaginosis, vaginal candidiasis, gonorrhea, chlamydia, and trichomonas. (See "Approach to females with symptoms of vaginitis", section on 'Initial diagnostic evaluation'.)

- Women with genital ulcers are evaluated for herpes simplex virus, syphilis, chancroid, lymphogranuloma venereum, and granuloma inguinale ( table 4) [50-52]. (See "Approach to the patient with genital ulcers".)

- Women with visible lesions undergo tissue biopsy. Performing tissue biopsy under colposcopic magnification can make biopsy samples more precise. (See "Vulvar lesions: Diagnostic evaluation", section on 'Use of biopsy'.)

- Women with suprapubic or bladder tenderness suggestive of infection of painful bladder syndrome undergo urinalysis, and urine culture if indicated. (See "Acute simple cystitis in women", section on 'Diagnostic approach' and "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis", section on 'Urine tests'.)

- Women suspected of having hyperprolactinemia, genital herpes (without visible ulcers), or Sjogren's disease undergo serum testing for the respective hormone levels, antibodies, or autoimmune abnormalities. (See "Clinical manifestations and evaluation of hyperprolactinemia" and "Epidemiology, clinical manifestations, and diagnosis of genital herpes simplex virus infection", section on 'Serology' and "Diagnosis and classification of Sjögren's syndrome" and "Diagnosis and classification of Sjögren's syndrome", section on 'Diagnostic tests'.)

**Imaging studies** — FSP does not cause pathognomonic imaging abnormalities. However, similar to the laboratory evaluation, imaging studies can be helpful to diagnose or exclude specific causes of FSP. Women with pelvic pain, deep dyspareunia, or a pelvic mass typically undergo transvaginal ultrasound to evaluate for endometriosis. Computed tomography scan can be indicated for the woman with suspected gastrointestinal involvement. Lumboscaral magnetic resonance imaging can be used to identify causes of neuropathy-related sexual pain that is suspected to be of spinal origin. (See "Evaluation of acute pelvic pain in nonpregnant adult women", section on 'Imaging' and "Approach to the patient with an adnexal mass", section on 'Imaging studies'.)

## COMMON SCENARIOS

The most common identifiable causes of FSP in premenopausal women are vulvar dermatologic conditions (infectious, hormonal, and autoimmune), endometriosis, provoked vulvar pain syndrome, myofascial pelvic pain syndrome, and interstitial cystitis/painful bladder syndrome [53]. Genitourinary syndrome of menopause is the most common cause of sexual pain in postmenopausal women. (See "Genitourinary syndrome of menopause (vulvovaginal atrophy): Clinical manifestations and diagnosis".)

**When to refer** — After completion of the initial history, physical examination, and indicated testing, we advise referring women suspected of the following diagnoses to a specialist for evaluation and treatment:

- **Interstitial cystitis/painful bladder syndrome** – Refer to a female pelvic medicine specialist. (See "Interstitial cystitis/bladder pain syndrome: Clinical features and diagnosis".)
- **Endometriosis** – Refer to a gynecologic specialist. (See "Endometriosis: Pathogenesis, clinical features, and diagnosis", section on 'Surgical exploration'.)
- **Gastrointestinal pathology** – Refer to a gastrointestinal specialist. (See "Overview of colonoscopy in adults", section on 'Patient selection'.)
- **Idiopathic FSP** – Refer to a gynecologic specialist to confirm that no causes for the woman's symptoms can be identified. (See "Chronic pelvic pain in adult females: Evaluation".)
- **Neurologic history or findings** – Refer to a neurologist. (See "The detailed neurologic examination in adults".)

## RESOURCES FOR PATIENTS AND CLINICIANS

- National Vulvodynia Association for information about vulvar and sexual pain.
- International Society for the Study of Vulvovaginal Disease provides a resource library for patients and clinicians.
- Pudendal Neuralgia Association for information about pudendal nerve pain.
- Interstitial Cystitis Association for information about bladder pain and sexuality.
- American Sexual Health Association for information about sexuality, infections and communicating with a partner.

- When sex gives you more pain than pleasure by the National Women's Health Resource Center, a nonprofit, independent health information resource for patients and clinicians.
- When sex is painful by the American College of Obstetricians and Gynecologists, a professional membership organization dedicated to the improvement of women's health.
- Sexual health and menopause by the North American Menopause Society, a nonprofit organization dedicated to promoting the health and quality of life of all women during midlife and beyond.

## SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Female sexual dysfunction".)

## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (see "Patient education: Dyspareunia (painful sex) (The Basics)" and "Patient education: Vaginismus (The Basics)")
- Beyond the Basics topic (see "Patient education: Sexual problems in women (Beyond the Basics)")

## SUMMARY AND RECOMMENDATIONS

- Female sexual pain (FSP) is vulvovaginal or pelvic pain that is provoked by or exacerbated during sexual contact. Sexual pain can be mild to severe, generalized or localized, lifelong or acquired, and idiopathic or secondary. (See 'Terminology' above.)

- The Fourth International Consultation on Sexual Medicine (ICSM) classifies FSP as female genital-pelvic pain dysfunction. (See 'Classification' above.)

- Women with genital-pelvic pain dysfunction must have persistent or recurring challenges with at least one of the following:

    - Pain with vaginal penetration
    - Marked vulvovaginal or pelvic pain during genital contact (ie, genital sexual pain)
    - Marked fear or anxiety about vulvovaginal or pelvic pain in anticipation of, during, or as a result of genital contact
    - Marked hypertonicity of overactivity of pelvic floor muscles with or without genital contact (ie, vaginismus)

- Incidence and prevalence estimates for FSP range widely because they vary with culture, patient age, definition of sexual dysfunction or pain, study design, and outcome measures. Risk factors for sexual dysfunction include biological, psychological, and sociocultural factors. (See 'Epidemiology' above.)

- Women with FSP can be grouped into those with an identifiable cause of their symptoms and those with idiopathic FSP. Women with FSP and no identifiable cause appear to have a type of chronic pain syndrome. Women can have both identified and idiopathic FSP. (See 'Etiology' above.)

- Pain with genital sexual contact is the hallmark symptom of women with FSP. Common sites of pain include the vulva, vaginal vestibule, introitus, vagina, pelvis, or pelvic floor ( figure 1). (See 'Clinical manifestation' above.)

- All women with sexual pain undergo a detailed history and physical examination. The purpose of the history is to evaluate for possible physical, sexual, and psychosocial origins of pain. During physical examination, the pain is mapped and the anatomy is inspected for possible causes of the symptoms. The results of the history and physical examination guide the selection of laboratory or imaging studies. Some women then undergo further diagnostic procedures. (See 'Our approach' above.)

    - Women who do not go through this evaluation and are referred directly for specialty care include women in current unsafe relationships, women with possible graft versus

host disease, and women who have undergone female genital cutting (circumcision). (See 'Indications for prompt referral' above.)

- Before the examination, the clinician asks the patient about previous experiences with the pelvic examination and obtains verbal consent. The woman is offered additional measure to reduce anxiety and discomfort. (See 'Patient comfort' above.)

- The most common identifiable causes of FSP in premenopausal women are provoked vulvar pain syndrome (vestibulodynia, vulvodynia), myofascial pelvic pain syndrome, and interstitial cystitis/painful bladder syndrome. In postmenopausal women, vulvar dermatologic conditions (infectious, hormonal, and autoimmune), endometriosis, and genitourinary syndrome of menopause are the most common causes of sexual pain. (See 'Common scenarios' above.)

## ACKNOWLEDGMENTS

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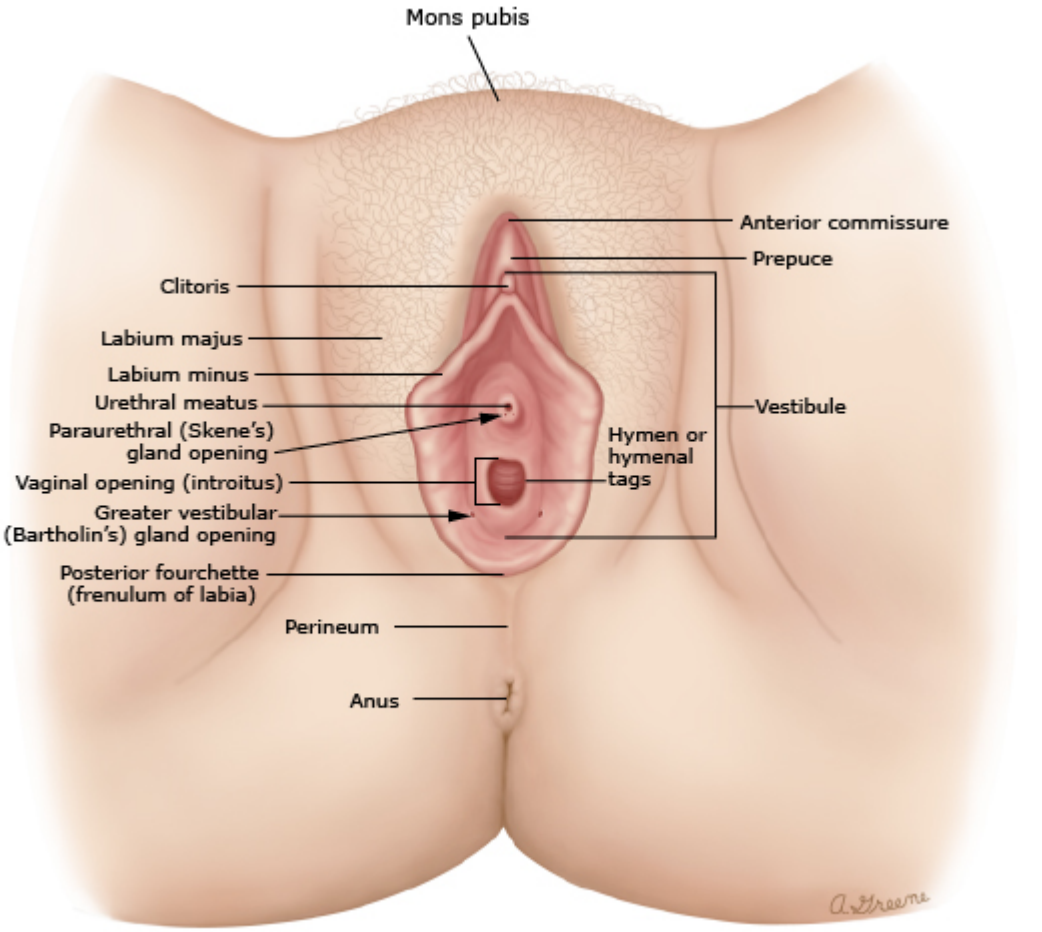
Topic 5432 Version 42.0

## GRAPHICS

### Anatomy of the vulva




Graphic 72614 Version 11.0

## PEARLS for open communication

| |
|---|
| **P:** The clinician should acknowledge that this is a PARTNERSHIP and they are in it together. |
| **E:** The clinician should express understanding and EMPATHY. |
| **A:** The clinician should address any unmet expectation with an APOLOGY. |
| **R:** The clinician should acknowledge any patient suffering or dissatisfaction with RESPECT/REFLECTION. |
| **L:** The clinician should LEGITIMIZE the patient's concerns and feelings. |
| **S:** The clinician should SUPPORT the patient and emphasize that they will continue to work with the patient. |

Acronym to help clinicians demonstrate empathy and facilitate open communication when taking a history.

Graphic 108044 Version 1.0

## Female Sexual Function Index (FSFI)*

| Question | Response options |
|---|---|
| Q1: Over the past four weeks, how **often** did you feel sexual desire or interest? | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |
| | 1 = Almost never or never |
| Q2: Over the past four weeks, how would you rate your **level** (degree) of sexual desire or interest? | 5 = Very high |
| | 4 = High |
| | 3 = Moderate |
| | 2 = Low |
| | 1 = Very low or none at all |
| Q3: Over the past four weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |
| | 1 = Almost never or never |
| Q4: Over the past four weeks, how would you rate your **level** of sexual arousal ("turn on") during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Very high |
| | 4 = High |
| | 3 = Moderate |
| | 2 = Low |
| | 1 = Very low or none at all |
| Q5: Over the past four weeks, how **confident** were you about becoming sexually aroused during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Very high confidence |
| | 4 = High confidence |
| | 3 = Moderate confidence |
| | 2 = Low confidence |
| | 1 = Very low or no confidence |
| Q6: Over the past four weeks, how **often** have you been satisfied with your arousal (excitement) during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |
| | 1 = Almost never or never |
| Q7: Over the past four weeks, how **often** did you become lubricated ("wet") during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |

| | |
|---|---|
| | 1 = Almost never or never |
| Q8: Over the past four weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse? | 0 = No sexual activity |
| | 1 = Extremely difficult or impossible |
| | 2 = Very difficult |
| | 3 = Difficult |
| | 4 = Slightly difficult |
| | 5 = Not difficult |
| Q9: Over the past four weeks, how often did you **maintain** your lubrication ("wetness") until completion of sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |
| | 1 = Almost never or never |
| Q10: Over the past four weeks, how **difficult** was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse? | 0 = No sexual activity |
| | 1 = Extremely difficult or impossible |
| | 2 = Very difficult |
| | 3 = Difficult |
| | 4 = Slightly difficult |
| | 5 = Not difficult |
| Q11: Over the past four weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)? | 0 = No sexual activity |
| | 5 = Almost always or always |
| | 4 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 2 = A few times (less than half the time) |
| | 1 = Almost never or never |
| Q12: Over the past four weeks, when you had sexual stimulation or intercourse, how **difficult** was it for you to reach orgasm (climax)? | 0 = No sexual activity |
| | 1 = Extremely difficult or impossible |
| | 2 = Very difficult |
| | 3 = Difficult |
| | 4 = Slightly difficult |
| | 5 = Not difficult |
| Q13: Over the past four weeks, how **satisfied** were you with your ability to reach orgasm (climax) during sexual activity or intercourse? | 0 = No sexual activity |
| | 5 = Very satisfied |
| | 4 = Moderately satisfied |
| | 3 = About equally satisfied and dissatisfied |
| | 2 = Moderately dissatisfied |
| | 1 = Very dissatisfied |
| Q14: Over the past four weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your partner? | 0 = No sexual activity |
| | 5 = Very satisfied |
| | 4 = Moderately satisfied |
| | 3 = About equally satisfied and dissatisfied |
| | 2 = Moderately dissatisfied |

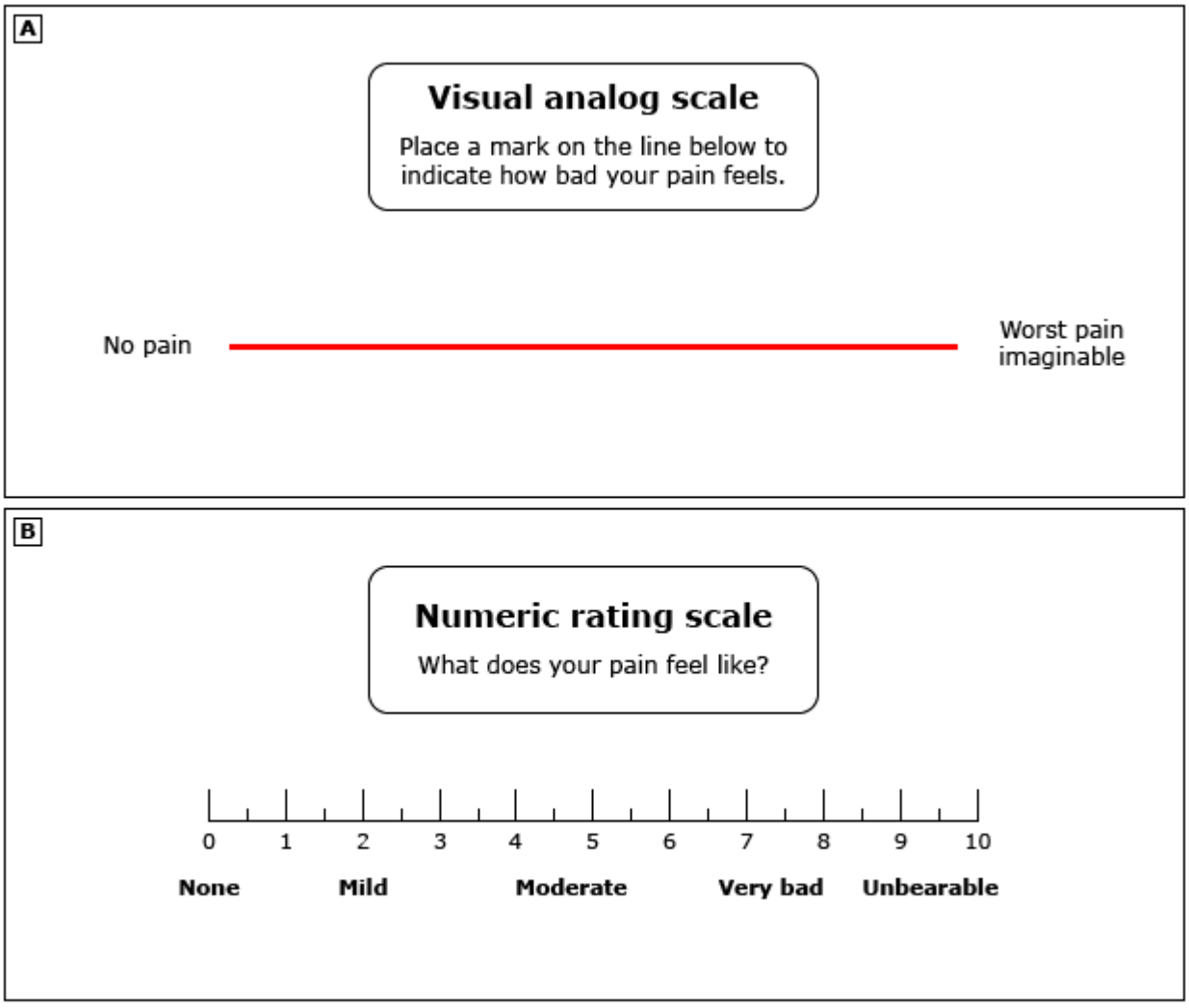
| | |
|---|---|
| | 1 = Very dissatisfied |
| Q15: Over the past four weeks, how **satisfied** have you been with your sexual relationship with your partner? | 5 = Very satisfied |
| | 4 = Moderately satisfied |
| | 3 = About equally satisfied and dissatisfied |
| | 2 = Moderately dissatisfied |
| | 1 = Very dissatisfied |
| Q16: Over the past four weeks, how **satisfied** have you been with your overall sexual life? | 5 = Very satisfied |
| | 4 = Moderately satisfied |
| | 3 = About equally satisfied and dissatisfied |
| | 2 = Moderately dissatisfied |
| | 1 = Very dissatisfied |
| Q17: Over the past four weeks, how **often** did you experience discomfort or pain during vaginal penetration? | 0 = Did not attempt intercourse |
| | 1 = Almost always or always |
| | 2 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 4 = A few times (less than half the time) |
| | 5 = Almost never or never |
| Q18: Over the past four weeks, how **often** did you experience discomfort or pain following vaginal penetration? | 0 = Did not attempt intercourse |
| | 1 = Almost always or always |
| | 2 = Most times (more than half the time) |
| | 3 = Sometimes (about half the time) |
| | 4 = A few times (less than half the time) |
| | 5 = Almost never or never |
| Q19: Over the past four weeks, how would you rate your **level** (degree) of discomfort or pain during or following vaginal penetration? | 0 = Did not attempt intercourse |
| | 1 = Very high |
| | 2 = High |
| | 3 = Moderate |
| | 4 = Low |
| | 5 = Very low or none at all |

* For the complete FSFI questionnaire, instructions and scoring algorithm, please see www.FSFIquestionnaire.com, or contact Raymond Rosen Ph.D., (Department of Psychiatry: UMDNJ-Robert Wood Johnson Medical School, 675 Hoes Lane, Piscataway, NJ 08854).

*Published in: Rosen R, Brown C, Heiman J, 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. Reproduced with permission from Raymond Rosen, Ph.D.*

Graphic 98403 Version 1.0

## Visual analog and numeric rating pain scales

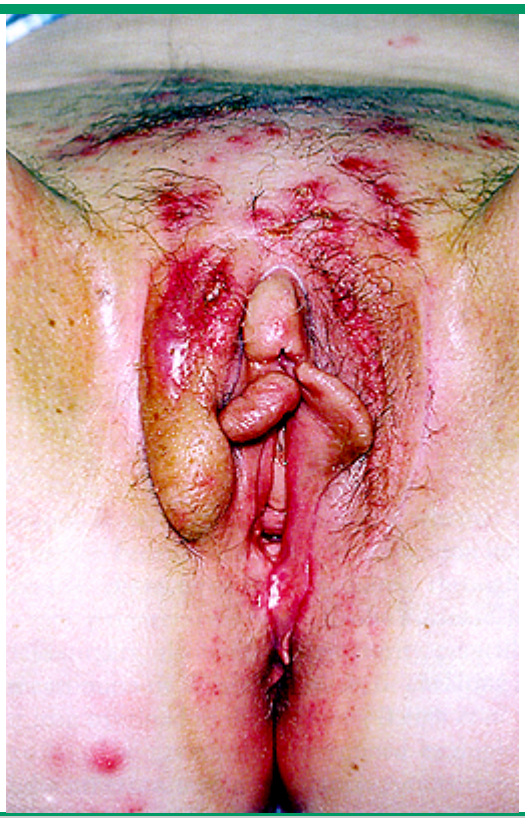



(A) When using a VAS, the patient is asked to mark a 10 cm line at a point that corresponds to the degree of pain. The VAS score is the distance in millimeters from the left end of the line to the patient's mark.
(B) When using an NRS, the patient indicates the number that corresponds to pain severity, either verbally or by marking the scale.

VAS: visual analog scale; NRS: numeric rating scale.

Graphic 62346 Version 7.0

## Crohn disease of vulva



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Graphic 73032 Version 3.0

**Medications associated with dyspareunia**

| Category or mechanism | Specific medications or classes of medications | Comment |
|---|---|---|
| Medications that may induce vulvovaginal atrophy | ▪ Aromatase inhibitors<br>▪ Gonadotropin-releasing hormone agonists or antagonists<br>▪ Some chemotherapeutic agents<br>▪ Tamoxifen<br>▪ Depot medroxyprogesterone acetate | If menopause is induced, vaginal atrophy will result. If the effect is temporary, these changes will reverse when the medication is discontinued.<br>Some chemotherapeutic agents result in premature ovarian failure.<br>In premenopausal women, tamoxifen has an anti-estrogenic effect on the vaginal epithelium, resulting in atrophy[1]. In contrast, in postmenopausal women, tamoxifen has an estrogenic effect on the vaginal epithelium. This results in increased vaginal discharge. Some postmenopausal women who are taking tamoxifen develop recurrent candidal vulvovaginitis, with resultant dyspareunia.<br>Depot medroxyprogesterone acetate suppresses the hypothalamic-pituitary axis, which induces hypoestrogenism and vaginal atrophy. |
| Oral contraceptives | | Some data suggest that oral contraceptives are associated with vestibulodynia. The mechanism of this is unclear[2]. These findings have not been investigated for other formulations of estrogen-progestin contraceptives (patch, vaginal ring). |
| Anticholinergics | ▪ Anti-histamines (eg, diphenhydramine, chlorpheniramine)<br>▪ Amitriptyline | May result in vaginal dryness and dyspareunia. |
| Medications that increase the risk of recurrent candidal vulvovaginitis | ▪ Immunosuppressants (eg, glucocorticoids, TNF-alpha inhibitors)<br>▪ Antibiotics | Candidal vulvovaginitis is associated with the development of vulvodynia. |
| Topical agents that cause irritant or allergic reactions | ▪ Spermicides | |
| Medications that may result in painful clitoral tumescence[3-9] | ▪ Serotonergic agents (Citalopram, Nefazodone, Trazodone)<br>▪ Dopaminergic agents (Bupropion, Bromocriptine, Olanzapine) | |
| Antihypertensives | | Sexual dysfunction appears to occur more frequently in hypertensive women. It is unclear whether this is associated with the hypertension itself or with antihypertensive medications. |

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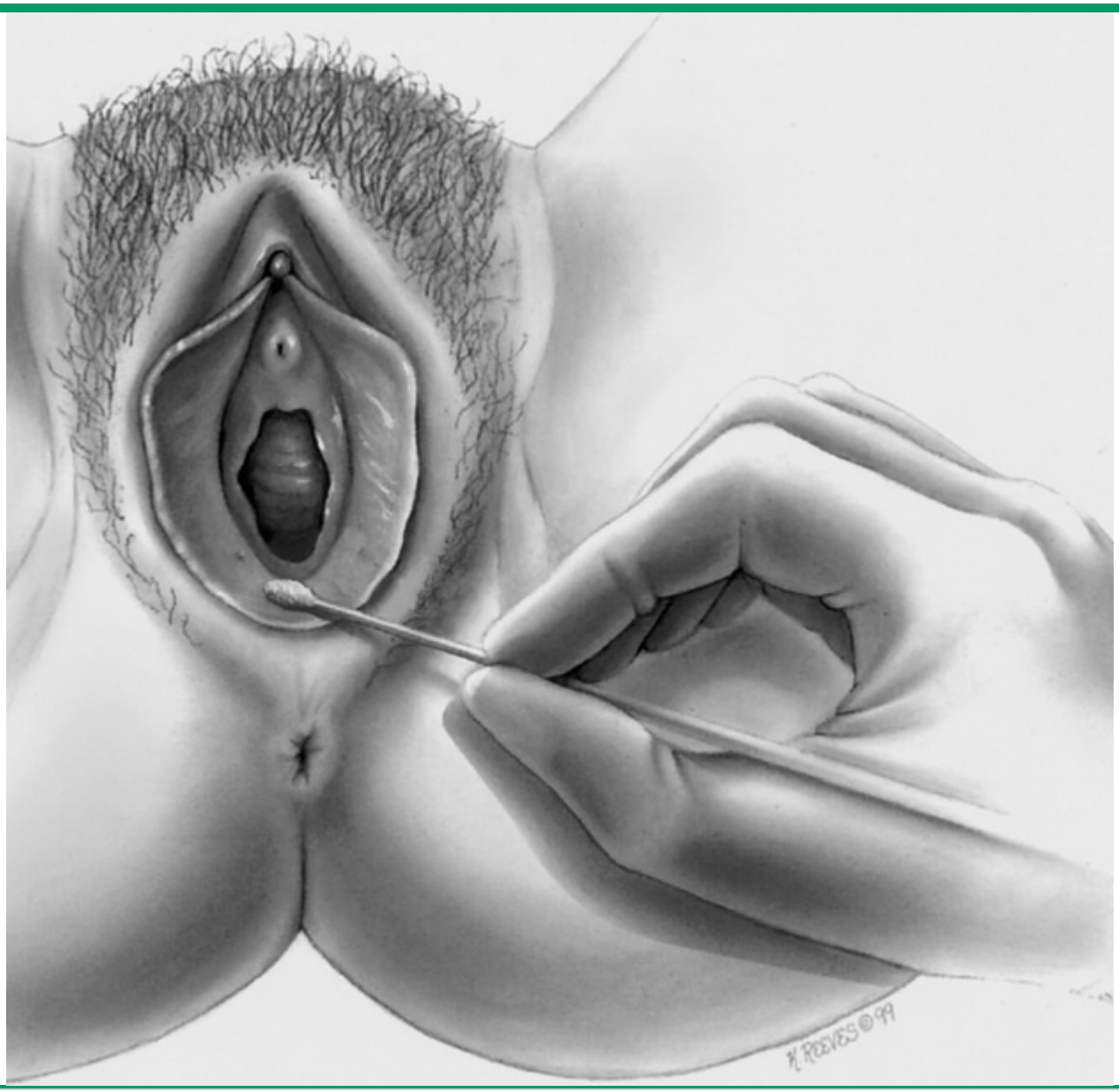
Graphic 62991 Version 3.0

## Cotton swab testing in localized vulvar vestibular pain syndrome

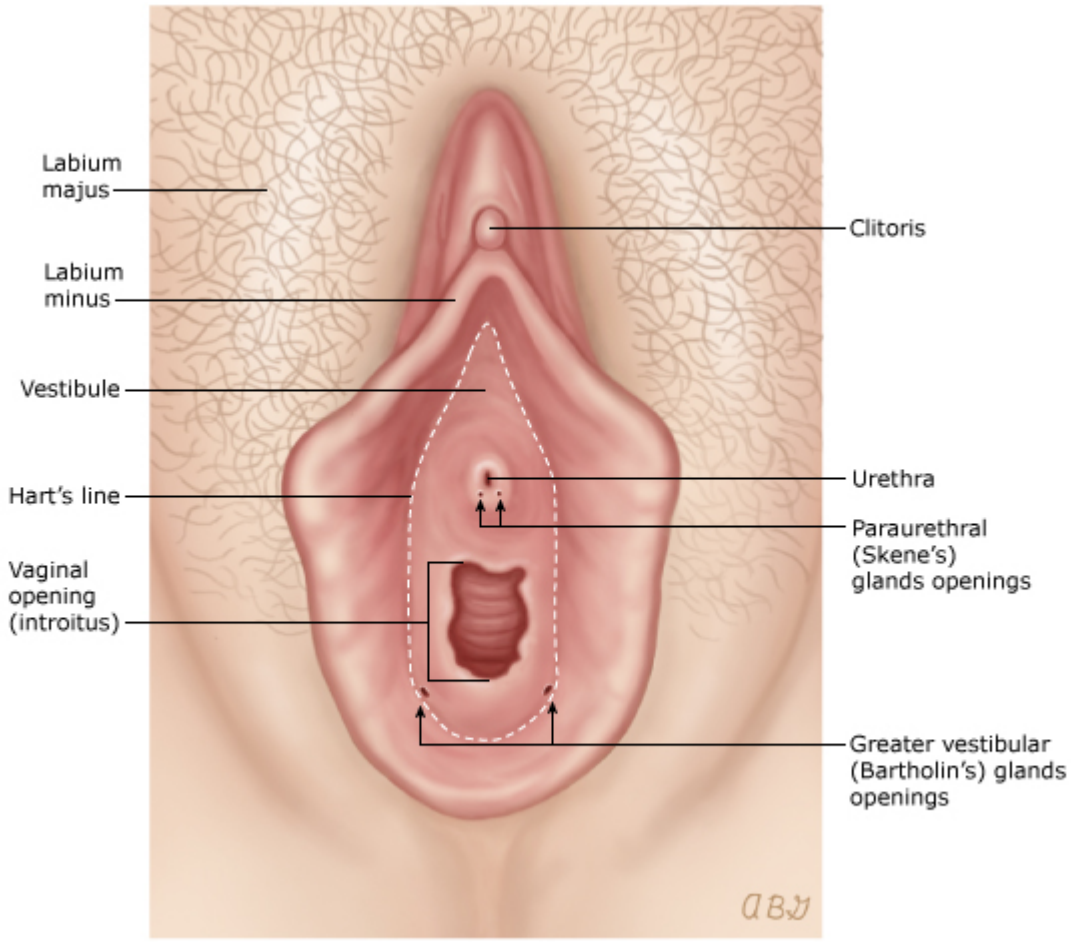


Cotton swab testing for localized vulvar vestibular pain syndrome. The vestibule is tested at different locations (examiner simulates the arms of a clock) between the hymen and Hart's line.



Graphic 105910 Version 2.0

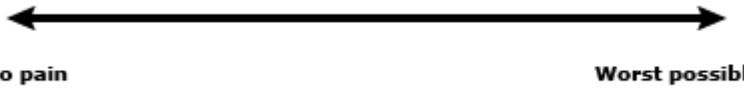
## Anatomy of vulvar vestibule




Shaded area includes tissue inside of Hart's line

Graphic 105677 Version 3.0

## Visual analog scale (VAS) for pain




For assessment of pain using the VAS, the patient makes a mark on a 10 cm line that corresponds to the intensity of pain. The distance from the "no pain" end of the line to the mark is measured and recorded as the score.

VAS: Visual analog scale.

Graphic 82442 Version 8.0

## Characteristics of sexually transmitted genital ulcers

| | Primary syphilis | Genital herpes | Chancroid | Lymphogranuloma venereum | Donovanosis |
|---|---|---|---|---|---|
| **Etiology** | *Treponema pallidum*. | Herpes simplex. | *Haemophilus ducreyi*. | *Chlamydia trachomatis*. | *Klebsiella granulomatis*. |
| **Incubation period** | 9 to 90 days; average 2 to 4 weeks. | 2 to 7 days. | 1 to 35 days; average 3 to 7 days. | 3 days to 3 weeks; average 10 to 14 days. | Precise data unavailable; probably a few days to several months. |
| **Number of lesions** | Usually single lesion, but multiple lesions may occur. | Multiple; may coalesce; more lesions appear in primary episodes than in recurrences. | Usually 1 to 3, but multiple lesions may occur. | Usually single. | Single or multiple. |
| **Appearance of genital ulcers** | Sharply demarcated round or oval ulcer with slightly elevated edges; may be irregular or symmetrical ("kissing chancre"). | Small superficial grouped vesicles and/or erosions; lesions may coalesce, forming bullae or large areas of ulceration; lesions have irregular borders. | Deep, sharply demarcated ulcer; irregular ragged undermined edge; ranges in diameter from a few mm to 2 cm. | Papule, pustule, vesicle, or ulcer; discrete and transient; frequently overlooked. | Sharply defined irregular ulcerations or hypertrophic, verrucous, necrotic, or cicatricial granulomas. |
| **Base** | Red, smooth and shiny, or crusted; serous exudate occurs when squeezed. | Bright, red, and smooth. | Rough, uneven, yellow to gray in color. | Variable. | Usually friable, rough, beefy granulations; can be necrotic, verrucous, or cicatricial. |
| **Induration** | Firm; does not change shape with pressure. | None. | Soft; changes shape with pressure. | None. | Firm granulation tissue. |
| **Pain** | Painless; may become tender if secondarily infected. | Common; more prominent with initial infection than with recurrences. | Common. | Variable. | Rare. |
| **Inguinal lymphadenopathy** | Unilateral or bilateral; firm, movable, and nontender; do not suppurate. | Usually bilateral, firm, and tender; more common in primary episodes than in recurrences. | Unilateral (rarely bilateral); overlying erythema; matted, fixed, and tender; may suppurate. | Unilateral or bilateral; initially movable, firm, and tender; later indolent; fixed and matted; "sign of Groove" may suppurate; fistulas. | Pseudobuboes; subcutaneous perilymphatic granulomatous lesions that produce inguinal swelling. |
| **Constitutional symptoms** | Rare. | Common in primary episode; less likely in recurrences. | Rare. | Frequent. | Rare. |
| **Course of disease if untreated** | Slowly resolves to latency (2 to 6 weeks). | Typically recurs. | May progress to erosive lesions. | Local lesions heal; systemic disease may | Worsens slowly. |

| | | | | | |
|---|---|---|---|---|---|
| | | | | progress; disfigurement; late complications. | |
| **Diagnostic tests** | Darkfield exam, direct immunofluorescence, FTA-ABS, VDRL, RPR. | Culture, PCR, direct immunofluorescence, serology, Tzanck smear, Pap smear, electron-microscopy, direct immunoperoxidase staining. | Culture, biopsy (rarely done); Gram stained smears have low specificity. | LGV complement fixation test; isolation of the microorganism by culture. | "Donovan bodies" in tissue smears; biopsy. |

FTA-ABS: fluorescent treponemal antibody absorption; VDRL: Venereal Disease Research Laboratory; RPR: rapid plasma reagin; PCR: polymerase chain reaction; LGV: lymphogranuloma venereum.

*Adapted with permission from: Martin DH, Mroczkowski TF. Sexually transmitted diseases. In: The Skin and Infection: A Color Atlas and Text, Sanders CV, Nesbitt LT (Eds), Williams & Wilkins, Baltimore 1995. p.95.*

Graphic 60432 Version 5.0

## Contributor Disclosures

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