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Chronic Pelvic Pain in Women
A Review

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IMPORTANCE Chronic pelvic pain (CPP) is a challenging condition that affects an estimated 26% of the world's female population. Chronic pelvic pain accounts for 40% of laparoscopies and 12% of hysterectomies in the US annually even though the origin of CPP is not gynecologic in 80% of patients. Both patients and clinicians are often frustrated by a perceived lack of treatments. This review summarizes the evaluation and management of CPP using recommendations from consensus guidelines to facilitate clinical evaluation, treatment, improved care, and more positive patient-clinician interactions.

OBSERVATIONS Chronic pelvic pain conditions often overlap with nonpelvic pain disorders (eg, fibromyalgia, migraines) and nonpain comorbidities (eg, sleep, mood, cognitive impairment) to contribute to pain severity and disability. Musculoskeletal pain and dysfunction are found in 50% to 90% of patients with CPP. Traumatic experiences and distress have important roles in pain modulation. Complete assessment of the biopsychosocial factors that contribute to CPP requires obtaining a thorough history, educating the patient about pain mechanisms, and extending visit times. Training in trauma-informed care and pelvic musculoskeletal examination are essential to reduce patient anxiety associated with the examination and to avoid missing the origin of myofascial pain. Recommended treatments are usually multimodal and require an interdisciplinary team of clinicians. A single-organ pathological examination should be avoided. Patient involvement, shared decision-making, functional goal setting, and a discussion of expectations for long-term care are important parts of the evaluation process.

CONCLUSIONS AND RELEVANCE Chronic pelvic pain is like other chronic pain syndromes in that biopsychosocial factors interact to contribute and influence pain. To manage this type of pain, clinicians must consider centrally mediated pain factors as well as pelvic and nonpelvic visceral and somatic structures that can generate or contribute to pain.

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Chronic pelvic pain (CPP) is estimated to affect 26% of the world's female population.[1-3] Although prevalence research is sparse, the frequency of CPP in the US is approximately 15%[4] and it is twice as common in women as it is in men.[5,6] Chronic pelvic pain accounts for 10% of all gynecology office visits, 40% of laparoscopies,[7] and 12% of hysterectomies[8] in the US annually even though the origin of CPP is not gynecologic in 80% of patients.[9-11] The US economic costs of CPP were conservatively estimated in 1996 at $2.8 billion annually (equivalent to $5.8 billion in 2020).[4] When the cost of individual conditions associated with CPP are combined, the estimated costs exceed $289 billion.[12]

Chronic pelvic pain is defined as pain perceived to originate from the pelvis, typically lasting more than 6 months, and is often associated with negative cognitive, behavioral, sexual, and emotional consequences and symptoms suggestive of lower urinary tract, sexual, bowel, myofascial, or gynecologic dysfunction.[1,13] The pain may be noncyclic or cyclic or related to menstruation (dysmenorrhea) and intercourse (dyspareunia).[1] The 6-month cutoff is not a requirement if central sensitization pain mechanisms (cognitive, behavioral, and emotional impairment) are documented.[13] According to the International Society for the Study or Pain, *perceived* indicates that the patient and the clinician, to the best of their ability, localized the pain as being in the pelvic area.[13] Dysmenorrhea is classified as a chronic pain syndrome if it is persistent and associated with negative cognitive, behavioral, sexual, or emotional consequences.[13]

The topic of CPP is broad and does not conform easily to the methods of a systematic review or meta-analysis. It is beyond the scope of this review to perform an in-depth analysis of all CPP disorders. Furthermore, many CPP treatments lack high-quality evidence to support use of the therapeutic interventions. Nonetheless, there is now a greater understanding of the factors influencing the development of CPP and consensus recommendations are emerging for the evaluation and management of CPP.[1,14-18] The goal of this review is to summarize common elements of these guidelines and provide an approach for the evaluation and treatment of patients with CPP.

Methods

A literature search for *chronic pelvic pain*, *persistent pelvic pain*, *chronic pelvic pain AND guideline*, *chronic pelvic pain AND systematic review* as Medical Subject Headings or title terms was conducted in PubMed, the Cochrane Database of Systematic Reviews, clinical practice guidelines from the Department of Veterans Affairs and the Department of Defense, and Google Scholar from inception of these databases to November 2020. The initial search identified 6474 articles in PubMed and 28 in the Cochrane Database of Systematic Reviews.

Although other relevant publications are referenced in this review, we prioritized publications that focused on female pelvic pain and were consensus guidelines, best-practice recommendations, or systematic reviews for the evaluation or treatment of CPP. Using these criteria, we found 4 CPP-specific guidelines published by the Royal College of Obstetricians & Gynaecologists (RCOG),[14] the Convergences Pelvic Pain Network,[18] the Society of Obstetricians and Gynaecologists of Canada (SOGC),[17] and the American College of Obstetricians and Gynecologists (ACOG).[1]

A search of 150 000 results from Google Scholar found 2 additional guidelines published by the International Society of Psychosomatic Obstetrics and Gynecology (ISPOG)[15] and the European Association of Urology (EUA)[16]; however, the EUA guideline was written primarily for male pelvic pain with less of a focus on female pain. Two guidelines[19,20] (one from the National Institute for Health and Care Excellence and the other from the European Society of Human Reproduction and Embryology) were included because they focused on CPP associated with endometriosis.

Two systematic reviews on CPP treatment were found in the Cochrane Database of Systematic Reviews and 1 review was found on the comparative effectiveness of therapies for noncyclic pelvic pain both in PubMed and in the Agency for Healthcare Research and Quality database.[21-23] Abstracts were initially reviewed by one of the authors (G.L.) and then further reviewed by the other 3 authors (J.C., C.O., and A.R.); disagreements were settled by consensus.

The guidelines used different methods for grading the evidence and for determining the strength of the recommendations. The ACOG and the RCOG used evidence grading criteria from the US Preventive Services Task Force. The SOGC used evidence grading criteria from the Canadian Task Force on Preventive Health Care. Both task forces use the same nomenclature for grading the evidence: grade 1 represents evidence obtained from at least 1 properly designed randomized clinical trial; grade 2 represents evidence obtained from clinical trials without randomization, from well-designed cohort or case-control studies, or from evidence obtained from multiple time series with or without an intervention; and grade 3 represents opinions of respected authorities based on clinical experience and descriptive studies. The ACOG rated the strength of the recommendations using a 4-tier system: level A indicates there was good and consistent scientific evidence to support the recommendation; level B indicates there was limited or inconsistent scientific evidence to support the recommendation; and level C indicates there was primarily only consensus or expert opinion to support the recommendation.

The SOGC rated the strength of the recommendations using a 5-tier system: level A indicates there was good evidence to support the recommendation; level B indicates there was fair evidence to support the recommendation; level C indicates there was insufficient evidence to support the recommendation; level D indicates there was fair evidence to not support the recommendation; and level E indicates there was good evidence to not support the recommendation. The EAU used similar quality of evidence assessment; however, they simply categorized the recommendation levels as strong based on grade 1 evidence or weak based on grade 2 or 3 evidence. The ISPOG did not perform a systematic review of the evidence due to lack of funding.

Box 1. Common Symptoms of Chronic Pelvic Pain

Common Symptoms

- Pelvic or vulvovaginal pain or pressure, urgency, frequency or retention, and dyspareunia
- Abdominal or pelvic pain or pressure, bloating, nausea, constipation, diarrhea, and no hematochezia
- Pain associated with alteration in bowel form or frequency
- Pelvic or vaginal pain (present in ≤80% of women with chronic pain syndromes) described as pressure, sharp, or pulling that (1) may be intermittent and worsens with activity or at the end of the day; (2) may be associated with urgency, frequency or retention, constipation, or dyspareunia; and (3) may present at trigger points
- Pelvic pain or pressure and sharp, cramping, cyclic, or continuous pain
- Heavy or irregular menstrual bleeding
- Dyspareunia
- Dyschezia
- Burning pain with radiation along particular dermatomes
- Central sensitization symptoms such as multiple pain sites or syndromes, sleep disturbance, anxiety, depression, rumination, catastrophizing, hyperalgesia, allodynia, or failure to respond to treatment

Pathophysiology and Clinical Presentation

Chronic pelvic pain is associated with many visceral, neurological, musculoskeletal, and psychological symptoms (**Box 1**); therefore, identifying the cause can be challenging. Grade 2 evidence shows that multiple pelvic pain syndromes often coexist in the same patient, for example, 48% of women with bladder pain syndrome or interstitial cystitis have endometriosis and 30% to 75% of individuals with bladder pain syndrome or interstitial cystitis have irritable bowel syndrome.[5,24] Zondervan et al[11] reported that 38.5% of women with CPP have irritable bowel syndrome and 24% have urinary symptoms. Mechanisms that explain the shared characteristics of overlapping chronic pain disorders include (1) neurological, neuroendocrine, immunological, and neurotransmitter dysfunction in the central and peripheral nervous system; (2) adverse childhood experiences, abuse, and trauma; and (3) psychological distress, psychiatric disorders, and dysfunctional reactions to stress.[1,25,26]

Visceral structures (uterus, bowel, and bladder) and somatic structures (skin, muscles, fascia, and bones) in the pelvis share neural pathways resulting in similar symptoms and making it difficult to differentiate somatic from visceral causes of pain (**Figure 1**). Both visceral and somatic structures can receive signals from and send input into the central nervous system (spinal cord and the brain). This interconnection underlies a phenomenon known as viscero-viscero cross-sensitization in which activity in 1 organ (eg, uterus) can hypersensitize another organ (eg, the bowel or

bladder).[27] In a similar corresponding phenomenon known as viscerosomatic convergence, persistent visceral nociceptive stimuli can lead to noxious somatic stimulation.[27] The result is that disorders such as irritable bowel syndrome, painful bladder syndrome or interstitial cystitis, and endometriosis can present with pelvic pain, pelvic muscle hypertonicity, myalgia, and widespread pelvic, abdominal, or low back muscle dysfunction.[28]

Conversely, persistent input from malfunctioning pelvic muscles, injury, or surgery can lead to visceral dysfunction characterized by bowel symptoms such as constipation and bladder symptoms such as urgency, frequency, and incomplete emptying.[28] Eventually, the augmented or repeated input from visceral and somatic structures into the spinal cord and the brain can enhance central nervous system responsiveness and decrease pain inhibition (Figure 1), resulting in overall pain hypersensitivity and central sensitization presenting as widespread pain (outside the pelvic area), sleep disturbance, and deterioration in mood and coping.[28,29] The presence of coexisting pain syndromes such as irritable bowel syndrome, fibromyalgia, chronic low back pain, temporomandibular joint disorder, and chronic fatigue is strongly suggestive of central dysfunction or sensitization.[26] Although treatment of organic or visceral lesions remains necessary, it is not always sufficient to alleviate CPP.[18,29] Untreated sensitization and myofascial dysfunction contribute to persistent pain despite effective organ-specific treatments.[1,28]

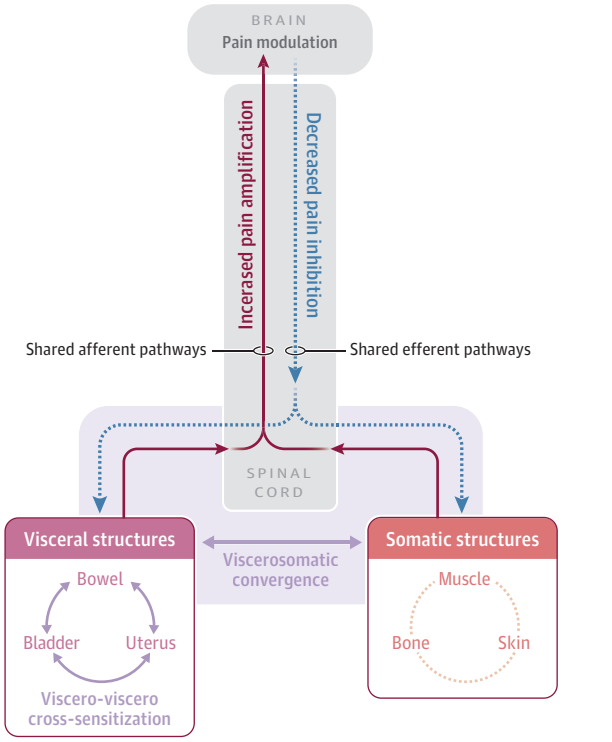
At specialized CPP centers with an evaluation that includes musculoskeletal examination, 50% to 90% of women have pain originating from musculoskeletal structures.[30-33] A focus on the patient's visceral or organic causes for pain, neglecting central sensitization and myofascial dysfunction, may lead to prolonged pain, delayed treatment,[17] and the patient being subjected to unnecessary surgical interventions.[29,34]

All clinical guidelines identified in this review propose a change in clinical practice and recommend that the following screening considerations be routinely incorporated into the evaluation of patients with CPP.[1,14-18,35,36] First, identify central sensitization symptoms (generalized pain, multiple pain syndromes, hypersensitivity, sleep disturbance, mood disorders) and social or environmental stressors (RCOG level B recommendation; EAU grade 1 evidence and strong recommendation; SOGC grade 2 evidence; ACOG level C recommendation; and ISPOG ungraded). Second, identify myalgias and neuralgias, including chronic low back pain and fibromyalgia (SOGC grade 1 evidence; ACOG and RCOG level C recommendation; EAU grade 3 evidence, weak recommendation; and ISPOG ungraded). Third, consider gynecologic causes (eg, dysmenorrhea, endometriosis, vulvodynia, pelvic masses, chronic infections) and nongynecologic causes (irritable bowel syndrome, bladder pain syndrome, or interstitial cystitis) (ACOG, SOGC, RCOG, and EUA grade 1-2 evidence and ISPOG ungraded).

History and Examination

Given the multifactorial nature of CPP, a biopsychosocial approach is needed (**Figure 2**).[1,14-18,25,26,28,36] Start with a detailed history taking of the pain onset and progression, location, frequency, distribution, quality, severity of all painful sites, coexisting pelvic and nonpelvic pain conditions, and assessment of contributing factors such as mood, sleep, fatigue, and functional burden.[1,14-18,25] The history

Figure 1. Viscero-Viscero Cross-Sensitization and Viscerosomatic Convergence Pathways

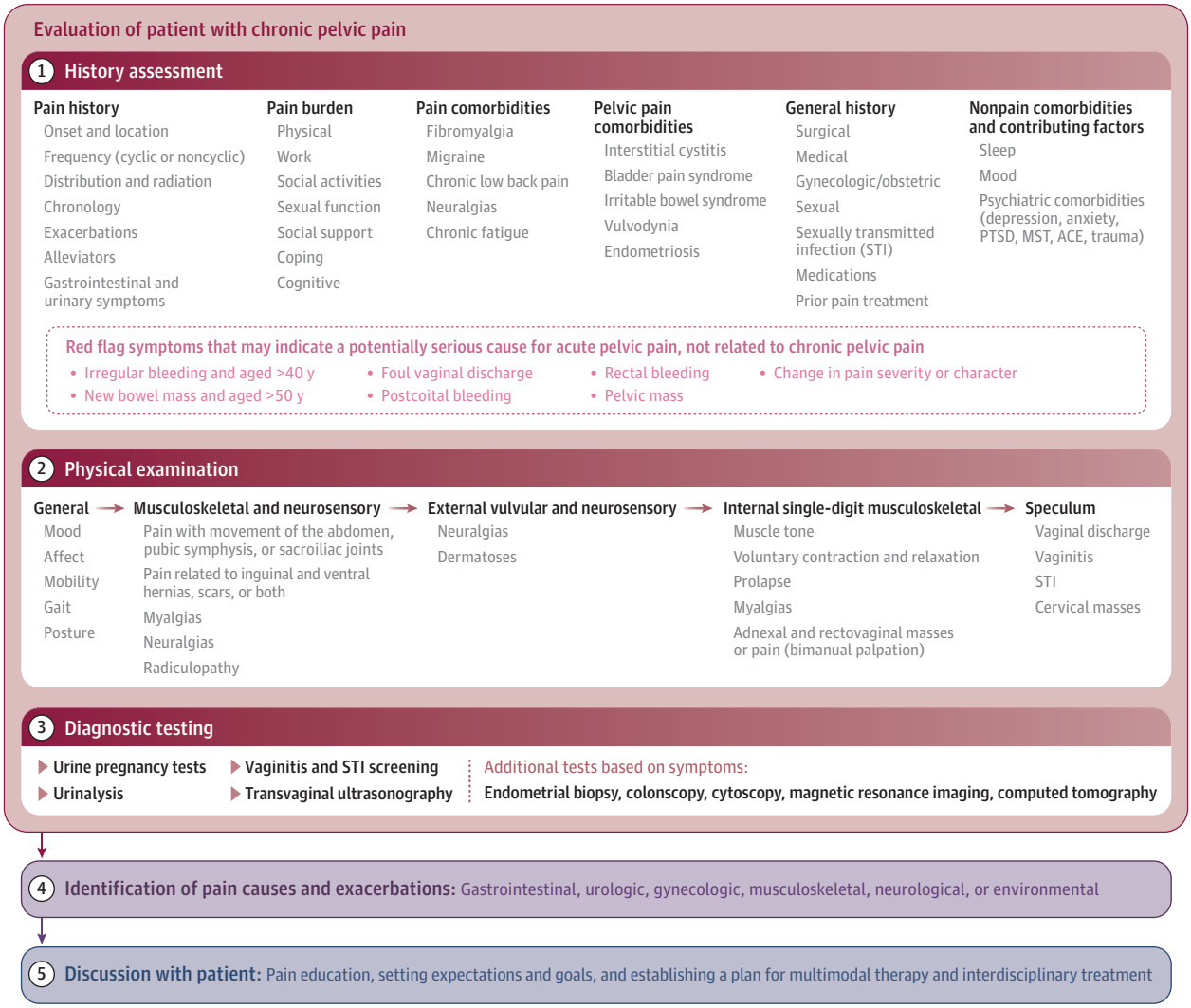


should include review of medical diagnoses, past surgeries, pain triggers (activity, menstruation, intercourse, stress), and urological, gastroenterological, gynecologic, and myofascial symptoms (**Box 2**).[1,14-18,25] Screening for bladder pain syndrome or interstitial cystitis and irritable bowel syndrome is specifically recommended by the ACOG (level C recommendation), the SOGC (grade 2 recommendation), the EUA (strong recommendation), and the ISPOG.[15-17]

In addition to identifying the sources of pain and helping to guide treatment, a thorough history taking helps generate trust, aligns patient-clinician expectations, and affects adherence with therapy and the outcomes of therapy.[14,17,37-39] Chronic pain management guidelines from the US Department of Health and Human Services, the EUA, the ROGC, the SOGC, and the ISPOG have identified communication and educating the patient as critical components of patient-centered pain management, improved outcomes, and appropriate use of medications.[14-17,36]

Evaluations focusing on patient communication and educating the patient are time-consuming. Self-administered surveys are helpful but longer visit times or sequential visits for evaluations are strongly recommended by the ACOG, the EAU, the RCOG, and the SOGC.[1,14,17] The International Pelvic Pain Society website provides pelvic pain assessment forms and educational material for patients.[17,40] Validation of the pain experience and open communication are considered essential parts of the evaluation that cannot necessarily be replaced by questionnaires.[14,15,17,38,39] Some women may not disclose important information about what are considered private topics such as sexual function, relationships, and abuse until trust is established, thus important elements of a patient's history may not be revealed until subsequent visits.[17] Pain severity can be measured using visual analog and numeric rating scales;

Figure 2. Suggested Steps to Be Taken During the Evaluation of Chronic Pelvic Pain



ACE indicates adverse childhood event; MST, military sexual trauma; and PTSD, posttraumatic stress disorder.

however, these scales do not completely capture the pain experience and its effect on function, family, relationships, sexual roles (ie, emotional distress and quality of life) that are amendable with cognitive and behavioral therapies.[1,14]

The SCOG guideline provides a listing of psychosocial domains to be reviewed during the initial and subsequent evaluations: (1) the effect of pain on functional roles (eg, disability in family, sexual, work, and recreational activities) and emotional functioning (eg, anxiety about pain and depression secondary to pain), (2) pain coping style (eg, ignoring the pain, becoming inactive, seeking emergency care), (3) pain modulators (eg, stress), (4) quality of interactions with previous health care clinicians, (5) mental health history, (6) history of neglect or sexual, physical, or emotional abuse, (7) substance use or abuse, and (8) social support.[17]

The relationship between trauma, abuse, or poor mental health and CPP is complex.[41-43] Pain is more prevalent in women with a history of abuse, mental illness, and social stressors. Women with CPP are significantly more likely to report experiencing childhood physical abuse (odds ratio, 4.3; 95% CI, 1.8-10.4), sexual abuse (odds ratio, 4.0; 95% CI, 1.8-8.8), and verbal or emotional abuse (odds ratio, 3.2; 95% CI, 1.5-6.8) compared with pain-free controls.[44] In a similar cohort, adverse childhood events also have been linked to increased risk for anxiety and depression.[45] Additional grade 2 evidence suggests that subtypes can be identified among women with CPP. Compared with women with cyclic or vulvovaginal pain, women with generalized pelvic and abdominal pain are more likely to have higher rates of abuse and trauma and higher rates of poor mental and physical health.[46] Beliefs about pain such as catastrophizing (pain amplification), feelings of helplessness, and posttraumatic stress disorder can increase pain intensity and lower quality of life.[47] Although there is controversy over whether trauma, abuse, and emotional distress cause or are risk factors for CPP,[41-43] there is no controversy about the need to identify these psychosocial modulators of pain and to incorporate them into the treatment plan.[1,16-18,25,36]

For women who have experienced trauma or psychological distress, the CPP history and the pelvic examination can be traumatic. Trauma-informed care is an evaluation approach that assumes many patients with chronic pain have had traumatic experiences and

focuses on patient-centered communication to provide the patient with a sense of control, helping to reduce anxiety and establishing a rapport with the clinician.[17,48] Some examples of trauma-informed care applicable to CPP include: (1) screening for trauma, abuse, and distress, (2) taking the history with the patient dressed, (3) explaining the steps of the examination and the reasons for performing a pelvic examination, (4) obtaining consent before starting or resuming the pelvic examination, (5) having a chaperone or assistant present during the examination, (6) giving the patient the option to stop the examination at any point and resume at a later time, (7) giving the patient the option to ask questions or to choose what will be done, and (8) offering the option of using a mirror to allow the patient to visualize the anatomy.[48] The authors recommend against the use of uncomfortable language such as asking patients to "spread legs" or "relax" to facilitate the examination. Instead, language should be used that gives patients a sense of control (eg, Would you like to stop the examination? Would you like to take a minute?) while monitoring for verbal and nonverbal cues of discomfort and the examination should be stopped if necessary.[17,34]

Although trauma-informed care is not specifically mentioned, guidelines from the SOGC, the ACOG, and the RCOG encourage health care clinicians emphasize listening with attention, conveying interest, and validating the patient's pain experience; these recommendations are consistent with patient-centered and trauma-informed care.[1,14,17] Trauma-informed care is especially important when assessing veterans. One in 4 veteran women have experienced military sexual trauma that has been associated with increased risk of posttraumatic stress disorder, anxiety, suicide attempt, and suicidal ideation as well as poor cognition and quality of life.[49] Military sexual trauma is also linked to chronic pain conditions, independent of the psychological consequences of the other types of trauma among veterans.[41,50]

The physical examination should include a general assessment of mood, affect, demeanor, mobility, and posture,[1,14,17] followed by a more in-depth evaluation of musculoskeletal, neurological, and visceral structures that may be involved in generating pain (Figure 2).[1,14-18,34,47] Combining visceral, musculoskeletal, and neurological assessment will identify most causes of CPP and will ensure common myofascial and neuropathic causes are not missed. Bimanual palpation can identify adnexal, uterine, and rectovaginal masses, whereas speculum visualization may find vaginal lesions, discharge, and bleeding.[17,35]

Begin by observing gait and posture in the standing and sitting positions; women with CPP arising from musculoskeletal structures may present with "uneven gait, discrepancies in limb length, restricted range of motion, asymmetry, leaning to one side to avoid the painful side, and frequent adjustment in position."[34] Palpation of the musculoskeletal structures of the abdomen, lower back, sacroiliac joints, and pubic symphysis can help identify focal areas of tenderness (trigger points) or widespread myofascial pain.[34] Exacerbation of pain with movement or contraction (lumbar flexion, extension, lateral, or rotation), hypertonicity, and inability to relax are indicative of myofascial dysfunction.[17,34] Grade 2 evidence demonstrates pain originating from musculoskeletal structures can be successfully identified in approximately 70% to 80% of women with CPP when muscular palpation is incorporated into the physical examination.[1,30,51]

Inspection of the abdominal skin may reveal surgical scars or other areas of pain that can be lightly touched with a cotton-tipped applicator to identify allodynia (painful response to a nonpainful stimulus), hyperalgesia (exaggerated pain in response to a painful stimulus), and particular patterns of pain radiation.[34] This type of neurosensory examination can find peripheral neuropathies, radiculopathies, and sensory abnormalities that can cause or augment pain.[34] Research shows that 15% to 20% of women with CPP have vulvar pain lasting longer than 3 months.[52,53] Therefore, external visual inspection and neurosensory examination should be extended to the vulva and perineum to identify generalized or localized areas of pain consistent with vulvodynia or pain arising from branches of the ilioinguinal, iliohypogastric, genitofemoral, obturator, and pudendal nerves. Neuropathy should be suspected when pain radiates along particular dermatomes and starts after trauma, surgery, childbirth, or repetitive activities such as prolonged sitting or long-distance cycling.[34,35,54,55]

After external musculoskeletal and neurosensory evaluation, the examiner should proceed to single-digit internal palpation of the pelvic floor muscles (SOGC grade 1 evidence); many pelvic muscles, including the levator ani and obturator, are accessible through the vagina.[1,17] According to the SOGC's extensive description of the musculoskeletal examination, single-digit internal evaluation should be done prior to bimanual palpation and the rectovaginal and speculum examinations. In addition to identifying sources of pain, the internal single-digit examination can be used to gauge whether the patient will tolerate further speculum examination or if it needs to be delayed.[17]

After counseling and obtaining consent, the clinician can gently insert a lubricated digit into the vagina and ask the patient to contract then relax the vaginal muscles (as if to stop a urinary stream); normally functioning pelvic floor muscles can generate a full squeeze around the digit as well as voluntarily relax. Moderate palpation (no more than 2 kg of pressure) of the anterior, posterior, and lateral vaginal walls will assess the obturator, coccygeus, and levator ani muscles, respectively. Tenderness, high tone, or involuntary

Box 2. Frequently Asked Questions About Chronic Pelvic Pain

What Common Conditions Should Be Considered in Patients With Chronic Pelvic Pain?
Chronic pelvic pain is most commonly caused by irritable bowel syndrome, bladder pain syndrome or interstitial cystitis, myalgias, and endometriosis.

Is Laparoscopy Necessary for the Evaluation of Chronic Pelvic Pain?
In cases in which pelvic imaging and examination does not reveal an organic cause for the pain, it is acceptable to start pain management and hormonal suppression before laparoscopy is considered.

What Physical Examination Findings Are Suspicious for Myofascial Dysfunction?
Exacerbation of pain with movement or contraction (lumbar flexion, extension, or lateral rotation), muscle hypertonicity or inability to voluntarily relax muscles, and focal areas of tenderness (trigger points).

When Should Neuralgia Be Suspected as the Cause of Pain?
When the reported pain follows a dermatome, when it presents with allodynia or hyperalgesia, and when the patient uses pain descriptors such as burning sensation, pins and needles, razor blades, cutting pain, hot, or raw skin. Additional risk factors for neuralgia include pelvic floor or abdominal surgeries, surgeries using mesh material, long-distance cycling, high-intensity sports, prolonged sitting jobs, diabetes, and herpetic infections.

spasm with light to moderate palpation is indicative of pelvic floor muscle dysfunction.[31,32,35,51] The single-digit examination can then be transitioned to bimanual palpation to look for cervical, uterine, adnexal, and rectovaginal masses or focal tenderness.[1,17,32,35,51]

If the single-digit evaluation is tolerated, a speculum examination should be performed using a small speculum, lubrication, and slow insertion to inspect the vaginal walls and cervix for lesions, discharge, or abnormal bleeding. At this time, vaginal discharge may be collected for culture and slide preparation to rule out infections.[17,35] Although CPP is reported in more than 35% of women after an episode of pelvic inflammatory disease,[56] acute pelvic or vaginal infections are rarely found. Nonetheless, vaginitis and sexually transmitted infection screenings are recommended (1) during the initial evaluation of pelvic pain, (2) if abnormal vaginal discharge is found, or in patients (3) at risk for exposure to sexually transmitted infections.[1]

Diagnostic Testing

Testing should be individualized to symptoms and limited to (1) a pregnancy test if patient is of reproductive age, (2) vaginitis and sexually transmitted infection screenings for abnormal vaginal discharge, (3) urinalysis for urinary symptoms, and (4) an endometrial biopsy for chronic abnormal bleeding (especially if aged >45 years) or suspicion of chronic pelvic inflammatory disease.[1]

Transvaginal pelvic sonography is the preferred imaging for identifying gynecologic pathology in CPP by all the guidelines. Transvaginal ultrasonography is more than 90% sensitive and specific for detecting myomas and differentiating adenomyosis from myomas.[57,58]

A normal pelvic examination accompanied by a normal pelvic ultrasound is reassuring; however, proceeding to more invasive tests, such as magnetic resonance imaging or laparoscopy, is of limited benefit. In a 2015 systematic review comparing magnetic resonance imaging with laparoscopy, the sensitivity of ultrasound for identifying pelvic pathology ranged between 58% and 89% and the sensitivity of magnetic resonance imaging ranged between 56% and 92%.[59] In a more recent study of women aged 16 to 30 years who had no evidence of organic pathology and normal transvaginal ultrasound, 20% were diagnosed with endometriosis at laparoscopy and only 2% had advanced disease.[60] A normal transvaginal ultrasound is reassuring enough that additional management, such as analgesia, lifestyle modifications, and hormonal suppression of cyclic pain, can be initiated without proceeding to laparoscopy.[19,59] Additional investigation or referral should be undertaken in patients who do not respond to treatment, especially if improvement is not attained within 3 months of initiating therapy.[17]

The role of laparoscopy as a diagnostic tool in CPP remains controversial; nearly 40% of laparoscopies performed for pelvic pain do not identify any pathology. When an abnormality is found, nearly 85% reveal early-stage endometriosis or adhesions.[17,59] Although diagnostic laparoscopy has the added advantage of providing an opportunity for surgical treatment, such as excision of endometriosis or adhesions, many women have continued pain after surgery. Conservative laparoscopic excision of endometriosis (where the uterus is spared) may lead to improvement in pain for 6 to 12 months after surgery; however, the reoperation rate for pain recurrence ranges from 15% to 50% within 24 months.[17,61,62]

Additional testing, such as computed tomography, magnetic resonance imaging, colonoscopy, and cystoscopy, is rarely needed and should be reserved for patients who are found to have worrisome symptoms such as a pelvic or abdominal mass, gastrointestinal bleeding, or hematuria. In such cases, additional consultation should be expedited.[1,17]

Treatments

Available treatments for conditions associated with CPP are detailed in the **Table** and in **Figure 3**. Because CPP can be multifactorial, it often requires several visits, long-term follow-up, and interaction with multiple clinicians.[1,14-18,26] Grade 1 and 2 evidence shows that, for most cases, the complexity of CPP is best addressed by teams of clinicians from various specialties, including primary care, gynecology, pain management, gastroenterology, urology, physiotherapy, and mental health.[1,14-17,19] Pain management should focus on all biopsychosocial factors known to affect pain severity and recovery, including sleep, mood, and environmental factors[1,14-18,20,26,36]; however, patients often focus on uterine or ovarian pathology that may not be the source of pain. Therefore, before initiation of treatment, educating the patient about the potential urological, gastrointestinal, or musculoskeletal contributions to pain is important as well as providing information about the role the central nervous system has in pain modulation.[17]

A variety of evidence-based therapies approved by the US Food and Drug Administration are available for individual chronic pain conditions (Table). Combination mind-body and interdisciplinary interventions are recommended over single-agent pharmacotherapy or surgery.[1,14-17,19,36] It is imperative that these condition-specific interventions be combined with adjuvant therapies addressing anxiety, depression, sleep, fatigue, cognitive impairment, and sexual dysfunction when needed.[1,14,17,36] Treatment guidelines also recommend that condition-specific therapies be combined with pelvic floor physical therapy to address myofascial pain and dysfunction (eg, dyspareunia, urgency, constipation) when musculoskeletal factors contribute to CPP.[1,14,17,36]

Educating the patient about pain mechanisms must also emphasize that CPP often requires long-term treatment, support, and significant lifestyle changes. Self-management with moderate physical activity, stress management, meditation, and mindfulness combined with behavioral therapies provided by mental health specialists can help patients achieve their goals of improving function, relationships, and quality of life.[1,17,36] Cognitive behavioral therapies are effective for developing pain coping strategies (SOGC recommendation, grade 1 evidence) and should be integrated into treatment plans when needed.[17]

For gynecologic conditions characterized by cyclic pelvic pain (dysmenorrhea, endometriosis) or for menstrual or premenstrual exacerbation of nongynecologic conditions, early intervention with suppression of the menstrual cycle is recommended, even in adolescents.[63] Continuous use of oral contraceptives may be more effective in controlling dysmenorrhea compared with cyclic use.[64] Continuous use has not been rigorously studied in CPP, however, the SCOG recommends a monophasic continuous regimen as first-line treatment.[17]

Table. Therapies and Resources for Common Conditions Associated With Chronic Pelvic Pain

Condition	Therapies by US Food and Drug Administration approval status		Resources for clinicians and patients	
	Approved	Not approved	Name of organization	Website
Irritable bowel syndrome (IBS)	• Diarrhea-predominant IBS: rifaximin, eluxadoline, or alosetron • Constipation-predominant IBS: linaclotide, lubiprostone, tegaserod, or tenapanor	• Diarrhea-predominant IBS: antispasmodics (dicyclomine or peppermint oil), antidepressants (SSRIs or tricyclic antidepressants), or *Lactobacillus* and *Bifidobacterium* combination probiotics • Constipation-predominant IBS: moderate fiber intake (≥30 mg/d) • Other therapies: pain education, elimination of dietary triggers, cognitive behavioral therapies, stress management, mindfulness, or meditation	Rome Foundation	https://theromefoundation.org/
			American Gastroenterological Association	https://www.gastro.org/guidelines
			Chronic Pain Research Alliance	http://chronicpainresearch.org/
			International Pelvic Pain Society	https://www.pelvicpain.org/IPPS/Professional/Patient_Handouts/IPPS/Content/Professional/Patient_Handouts.aspx?hkey=4b5d6c87-5797-4a92-b0b4-61846240afb3
Bladder pain syndrome or interstitial cystitis	• Pentosan polysulfate sodium	• Pain education, elimination of dietary triggers, behavioral modification, stress management, or relaxation • Physical therapy or neuromodulation (percutaneous tibial nerve stimulation) • Pharmacotherapy with amitriptyline, cimetidine, or hydroxyzine • Intravesical instillation of heparin, dimethylsulfoxide, or lidocaine • Cystoscopy with hydrodistension along with treatment of Hunner ulcers • Surgery such as diversion, cystectomy, or cystoplasty • Other therapies: intradetrussor botulinum toxin A, spinal cord neuromodulation, or cyclosporine A therapy	American Urologic Association	https://www.auanet.org/guidelines/interstitial-cystitis-(ic/bps)-guideline
			Chronic Pain Research Alliance	http://chronicpainresearch.org/
			International Pelvic Pain Society	https://www.pelvicpain.org/IPPS/Professional/Patient_Handouts/IPPS/Content/Professional/Patient_Handouts.aspx?hkey=4b5d6c87-5797-4a92-b0b4-61846240afb3
			Interstitial Cystitis Association	https://www.ichelp.org/
Endometriosis	• Progestins: norethindrone or medroxyprogesterone acetate • Gonadotropin-releasing hormone agonists or antagonists: nafarelin acetate, goserelin acetate, danazol, or elagolix	• Pain education, stress management, moderate activity and exercise, continuous suppression of menstrual cycle or lowering of estrogen levels with hormonal therapies (progestin only or combination hormonal contraceptives; however, progestins are preferred) • Other gonadotropin-releasing hormone agonists or antagonists or aromatase inhibitors with add-back progestin therapy • Surgical excision or ablation, followed by menstrual suppression if the uterus is retained • Hysterectomy, oophorectomy, or both in women no longer desiring fertility	National Institute for Health and Care Excellence	https://www.nice.org.uk/guidance/ng73
			American Society for Reproductive Medicine	https://www.asrm.org/topics/topics-index/endometriosis/
			European Society of Human Reproduction and Embryology	https://www.eshre.eu/Guidelines-and-Legal/Guidelines/Endometriosis-guideline
			Chronic Pain Research Alliance	http://chronicpainresearch.org/
			International Pelvic Pain Society	https://www.pelvicpain.org/IPPS/Professional/Patient_Handouts/IPPS/Content/Professional/Patient_Handouts.aspx?hkey=4b5d6c87-5797-4a92-b0b4-61846240afb3
			Endometriosis Association	https://endometriosisassn.org/
Dysmenorrhea	• NSAIDs are first-line analgesic therapy: diclofenac, ibuprofen, ketoprofen, naproxen, meclofenamate, or mefenamic acid	• Pain education, moderate exercise, or topical heat • Hormonal therapies (progestin or combination hormonal contraceptives) • Continuous suppression is recommended if cyclic hormonal regimens fail to improve pain • Gonadotropin-releasing hormone agonists or antagonists with add-back therapy may be used if hormonal suppression fails	American College of Obstetricians and Gynecologists	https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/12/dysmenorrhea-and-endometriosis-in-the-adolescent
			American Academy of Family Physicians	https://www.aafp.org/afp/2014/0301/p341.html

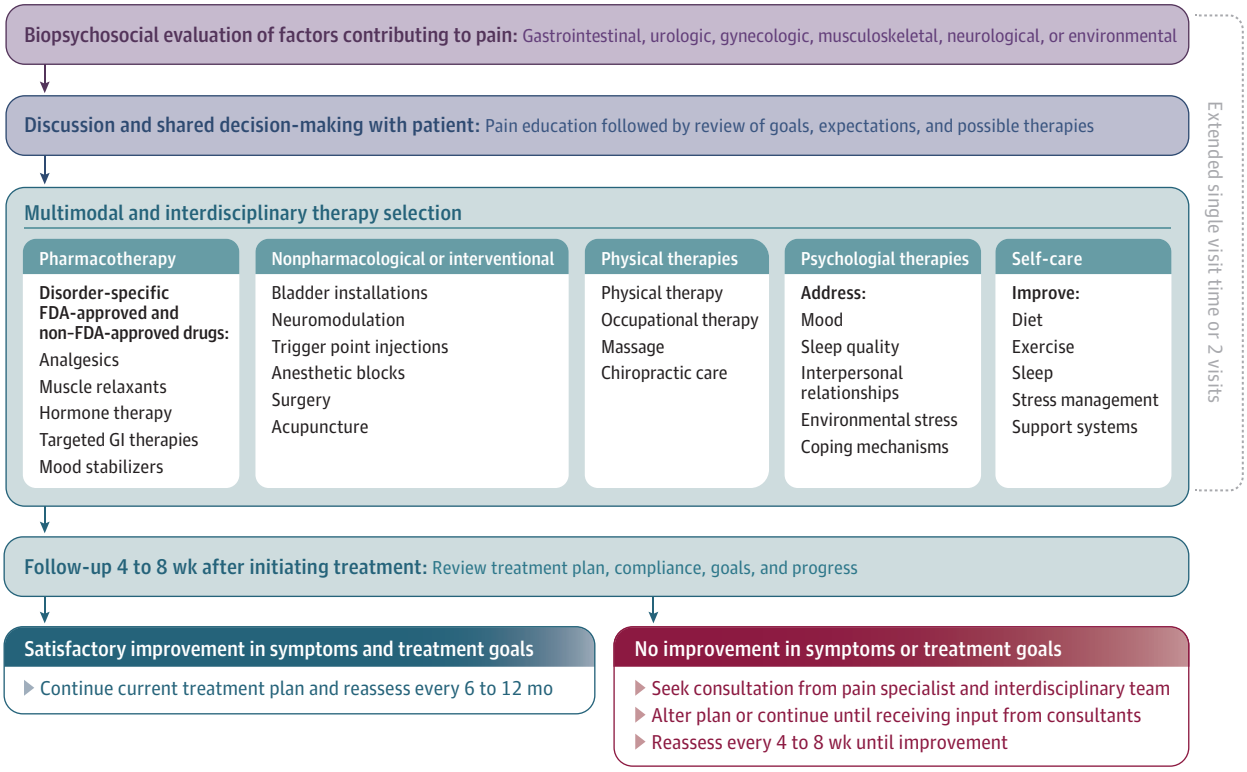
(continued)

Table. Therapies and Resources for Common Conditions Associated With Chronic Pelvic Pain (continued)

Condition	Therapies by US Food and Drug Administration approval status		Resources for clinicians and patients	
	Approved	Not approved	Name of organization	Website
Myalgias	• None	• Physical therapy incorporating manual therapy, exercise, patient education of pelvic anatomy and function, or use of physical agents to improve tissue elasticity or tolerance to sexual intercourse (ie, TENS machine, biofeedback, ultrasound, laser, or vaginal dilators) • NSAIDs or muscle relaxants • Less evidence for tricyclic antidepressants and anticonvulsants • Hormonal suppression of menstruation if pain is cyclic • Injection therapy using anesthetics or botulinum toxin A • Neuromodulation (based on a few observational studies)	International Pelvic Pain Society	https://www.pelvicpain.org/IPPS/Professional/Patient_Handouts/IPPS/Content/Professional/Patient_Handouts.aspx?hkey=4b5d6c87-5797-4a92-b0b4-61846240afb3
Chronic low back pain	• Duloxetine • Intracept intraosseous nerve ablation system • Senza spinal cord stimulation system • Nevro spinal cord stimulator	• Pain education, moderate exercise, physical therapy, or stress reduction • Treatment with NSAIDs or tramadol	American Academy of Family Physicians	https://www.aafp.org/patient-care/clinical-recommendations/all/back-pain.html
			Department of Veterans Affairs and the Department of Defense	https://www.healthquality.va.gov/guidelines/Pain/lbp/
			Duodecim Evidence-Based Medicine Guidelines	https://www.ebm-guidelines.com/ebmg/ltk.free?p_artikkeli=ebm00435
			Chronic Pain Research Alliance	http://chronicpainresearch.org/
Fibromyalgia	• Milnacipran hydrochloride • Duloxetine • Pregabalin	• Pain education, moderate exercise, physical therapy, or stress reduction • Behavioral therapies that address sleep, mood, and cognitive impairment • Treatment with NSAIDs or tramadol	European League Against Rheumatism	https://ard.bmj.com/content/76/2/318
			American Academy of Family Physicians	https://www.aafp.org/afp/2007/0715/p247.html
			Chronic Pain Research Alliance	http://chronicpainresearch.org/
Neuralgias or neuropathic pain	• Tapentatol (for neuropathic pain associated with diabetic peripheral neuropathy)	• Pain education, moderate exercise, physical therapy, or stress reduction • Weight loss or sleep interventions • First-line pharmacological agents: anticonvulsants (gabapentin or pregabalin), serotonin-noradrenaline reuptake inhibitors (duloxetine or venlafaxine), or tricyclic antidepressants (amitriptyline) • Second-line pharmacological agents: capsaicin 8% patches, lidocaine patches, or tramadol • Third-line pharmacological agents: opioids or botulinum toxin • Interventional therapies: nerve blocks, epidural injections, neuromodulation, cryoablation, pulsed radiofrequency ablation, surgical nerve release, ablation, or transection	International Association for the Study of Pain	https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=6530

Abbreviations: NSAIDs, nonsteroidal anti-inflammatory drugs; SSRIs, selective serotonin reuptake inhibitors.

Figure 3. Suggested Treatment Pathway for Chronic Pelvic Pain



FDA indicates Food and Drug Administration; GI, gastrointestinal.

Procedural interventions such as nerve block injections, trigger point injections (with saline, local anesthetic, or botulinum toxin A), or surgery may be beneficial, however, the evidence to support their use is limited.[1,14,17,36] Even though surgeries such as laparoscopic uterosacral nerve ablation and adhesiolysis are not recommended based on statements from the ACOG (level A recommendation)[1] and based on a systematic review conducted by the Agency for Healthcare Research and Quality,[21] the SOGC has issued a supportive recommendation for surgical interventions in select patients. However, the SOGC does acknowledge that this recommendation is based on grade 3 evidence.[17]

Pharmacotherapy with anticonvulsants or antidepressants, in particular selective serotoninergic reuptake inhibitors or tricyclic antidepressants, help with associated mood, sleep, and neuropathic pain symptoms and may in turn improve quality of life but only provide minimal improvements in pain. Although gabapentin is widely used for a variety of chronic pain syndromes, a single large, multicenter, double-blind, randomized clinical trial involving 306 women with CPP failed to show significant improvements in pain relief.[65] Similarly, in another randomized clinical trial involving 89 patients, gabapentin did not improve pain in women with vulvodynia.[66] However, a separate trial showed that gabapentin was more effective than placebo in improving overall sexual function.[67] Despite improvement, overall sexual function remained lower than in the pain-free controls.[67] Opioids are not recommended for the management of CPP by the ACOG, whereas the SOGC states opioids may be considered "under adequate supervision."

Trauma-informed care should be incorporated into all aspects of clinical care such as treatment selection, shared decision-making, and goal setting to facilitate treatment adherence and improve outcomes.[17,36] Treatment progress should be assessed every 4 to 8 weeks and referral to pain and mental health specialists should be considered if improvement in pain, function, or both is not achieved within 8 to 12 weeks to avoid delay of diagnosis and treatment.[14,17,36]

Limitations

This review has several limitations. First, although this review was based on consensus guidelines, many of the recommendations are based on grade 3 evidence because high-quality evidence for most topics related to CPP is still lacking.

Second, there is substantial heterogeneity in the primary topics covered and the evidence grading systems used by each guideline. Third, multimodal therapy is consistently highly recommended; however, randomized clinical trials evaluating multimodal approaches to pelvic pain are sparse.

Conclusions

Chronic pelvic pain is like other chronic pain syndromes in that biopsychosocial factors interact to contribute and influence pain. To manage this type of pain, clinicians must consider centrally mediated pain factors as well as pelvic and nonpelvic visceral and somatic structures that can generate or contribute to pain.

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Submissions: We encourage authors to submit papers for consideration as a Review. Please contact Mary McGrae McDermott, MD, at mdm608@northwestern.edu.

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