



**Chronic Overlapping Pain Conditions:  
Evaluation and Management**

Georgine Lamvu, MD, MPH

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**Learning Objectives**

1	Summarize the underlying disease mechanisms common across COPCs
2	Perform a comprehensive biopsychosocial assessment for chronic pain, which includes common nonpain comorbidities and domains such as sleep, mood, fatigue, cognitive impairment, and physical and social function
3	List common pharmacologic and nonpharmacologic treatment approaches for COPCs and chronic pain
4	Formulate individualized multimodal treatment regimens that address affected pain and nonpain domains and use validated tools to measure outcomes

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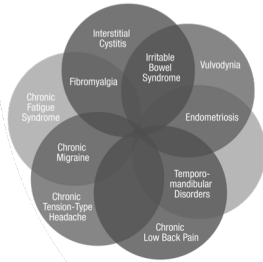
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**Chronic Overlapping Pain Conditions**

- Conditions that often coexist and share similar disease mechanisms across the neurological, endocrine and immune systems
- Conditions predominantly (or solely) affect women
- Any number and combination of conditions is possible
- Several conditions can develop at once or gradually over years



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**Chronic Pain Conditions**

Abbreviation	Term
cLBP	Chronic low back pain
cMig	Chronic migraine headache
cTTH	Chronic tension type headache
ENDO	Endometriosis
FM	Fibromyalgia
IC / PBS	Interstitial cystitis/painful bladder syndrome
IBS	Irritable bowel syndrome
ME / CFS	Myalgic encephalomyelitis/chronic fatigue syndrome
TMD	Temporomandibular disorders
Vulv	Vulvodynia

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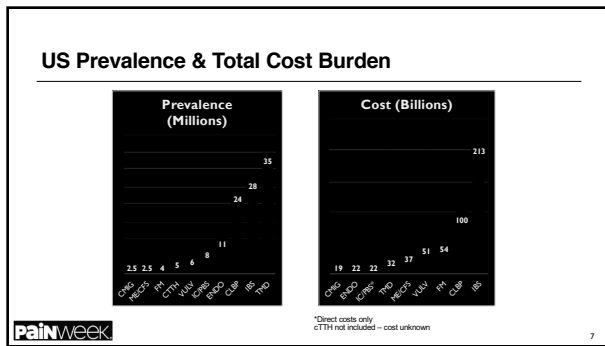
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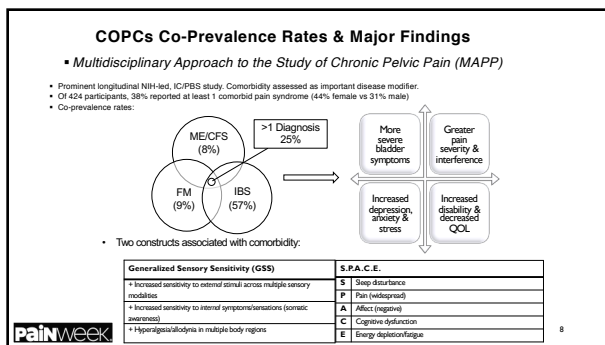
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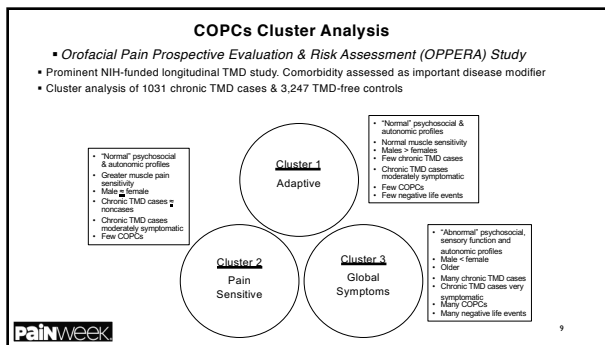
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### Notable Findings Relative to Comorbidity

Highlights Importance of Comorbidity in Clinical Examination

Mounting evidence demonstrates that as the number of pain diagnoses (or body sites of pain) increases, a vicious cycle ensues

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### Mechanistic Characterization of Pain

Variable degrees of any mechanism can contribute in any disease

	Noiceptive	Neuropathic	Centralized
<b>Cause</b>	Inflammation or tissue damage	Nerve entrapment or damage	CNS or systemic problem
<b>Clinical Features</b>	Pain is well localized, consistent effect of activity on pain	Follows distribution of peripheral nerves (ie, dermatome), episodic, lancinating, numbness, tingling	Pain is widespread and accompanied by fatigue, sleep, memory and/or mood difficulties as well as history of previous pain elsewhere in body
<b>Treatment</b>	Nonsteroidal anti-inflammatory drugs, injections, surgery	Local treatments aimed at nerve (surgery, injections, topical) or CNS-acting drugs	CNS-acting drugs, nonpharmacological therapies
<b>Classic Examples</b>	Osteoarthritis Autoimmune disorders Cancer pain	Diabetic painful neuropathy Post-herpetic neuralgia Sciatica Carpal tunnel syndrome	<b>COPCs</b>

**PainWeek** Figure adapted from: Harper DE, et al. J Dent Res. 2016 Sep;95(10):1102. 11

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### COPCs Pathophysiology

**PainWeek** Adapted from Figure 4: Moxner W, et al. J Pain. Sept 2016;17(9):T93-107. 12

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### Diagnostic Criteria: Central Sensitization

International Association for the Study of Pain defines Central Sensitization as an: "Increased responsiveness of nociceptive neurons in the central nervous system to their normal or subthreshold afferent input."

Criteria		
		No history or identification of lesion or disease of the nervous system
<b>Step 1</b>	Rule out neuropathic pain	Pain is not neuroanatomically logical Pain is not described as burning, shooting or pricking
<b>Step 2</b>	Rule out nociceptive pain	Pain will be disproportionate to the extent of injury or pathology
<b>Step 3</b>	At least one of the following (if Steps 1-3 are positive, CS is present)	Bilateral symmetrical pain pattern
		Pain varying in anatomical location (ie, traveling) or large neuroanatomically logical distribution
<b>Step 4</b>	General hypersensitivity to sensory stimuli (if Steps 1-2 & 4 are positive, CS is present)	Widespread pain in all four quadrants of the body
		Allodynia/hyperalgesia outside the reported primary site of pain
		Can include: mechanical pressure, odors, chemicals, cold, heat, electrical stimulation, light sounds, weather, food, stress, emotions, mental load. Can be assessed as a score of $\geq 40$ on the <a href="#">Central Sensitization Questionnaire</a>

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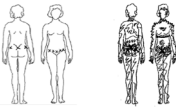
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### Clinical Signs Suggestive of Central Sensitization



- Pain at multiple sites in the body
- Multiple pain diagnoses
- Wide spread hyperalgesia and/or allodynia
- Pain associated with psychiatric or emotional dysfunction
- Opioids do not effectively reduce pain
- Pain does not respond to peripheral therapies

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### Diagnostic Criteria: Temporomandibular Disorders

International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group

Axis I: Pain Related TMD Diagnoses (addresses neurosensory input from peripheral tissues)

Disorder	History	Exam Findings
<b>Myalgia</b>	Pain in a masticatory structure modified by jaw movement, function or parafunction.	Report of familiar pain in temporalis or masseter muscle(s) with: 1) Palpation of these muscles; or 2) Maximum unassisted or assisted opening movement(s)
<b>Myofascial Pain with referral</b>	Same as for Myalgia	1) Report of familiar pain with palpation of the temporalis or masseter muscle(s); and Report of pain as a site beyond the boundary of the muscle being palpated (eg, referral to tooth)
<b>Arthralgia</b>	Same as for Myalgia	Report of familiar pain in TMJ with: 1) Palpation of the TMJ; or 2) Maximum unassisted or assisted opening, right or left lateral, or protrusive movement(s)
<b>Headache Attributed to TMD</b>	Headache in temporal area modified by jaw movement, function or parafunction.	Report of familiar headache in temple area with: 1) Palpation of the temporalis muscle(s); or 2) Maximum unassisted or assisted opening, right or left lateral, or protrusive movement(s). (Note: A diagnosis of pain-related TMD must also be present (eg, myalgia, arthralgia))

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**Diagnostic Criteria: Temporomandibular Disorders (cont'd)**

Axis II: Questionnaires to assist in the identification of patients with a range of simple to complex presentations that affect treatment and prognosis.

Questionnaires	Utility
<b>Graded Chronic Pain Scale</b>	Pain intensity component: pain amplification and central sensitization Pain-related disability component: decreased functioning due to pain
<b>Pain Drawing</b>	Distinguishes between local, regional and widespread pain; assesses comorbid conditions; may indicate pain amplification, sensitization and central dysregulation
<b>Jaw Functional Limitation Scale</b>	Quantifies impact on jaw mobility, mastication and verbal and emotional expression
<b>Patient Health Questionnaire-4</b>	Identifies psychological distress (depression and anxiety)
<b>Patient Health Questionnaire-9</b>	Identifies depression-contributes to chronicity
<b>Generalized Anxiety Disorder-7</b>	Identifies anxiety; contributes to stress reactivity and parafunction
<b>Patient Health Questionnaire-15</b>	Measures physical symptoms; assess for specific comorbid functional disorders
<b>Oral Behaviors Checklist</b>	Measures parafunction; contributes to onset and perpetuation of pain



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**Diagnostic Criteria**

2018 IHS Classification ICHD-3

Criteria	Chronic Migraine	Chronic Tension Type
A	Headache (migraine-like or tension-type-like) on 15 days/month for > 3 months, and fulfilling criteria B & C	Headache occurring on 15 days/month on average for > 3 months (180 days/year), fulfilling criteria B & D
B	Occurring in 3 phases who has had 5 or more attacks fulfilling criteria B & C or D	Lasting hours to days, or unremitting
C	On 8 days/month for > 3 months, fulfilling any of the following: • Bilateral location • Pressing or tightening (non-pulsating) quality • Mild or moderate intensity • Not aggravated by routine physical activity, such as walking or climbing stairs	At least 2 of the following 4 characteristics: • Bilateral location • Pressing or tightening (non-pulsating) quality • Mild or moderate intensity • Not aggravated by routine physical activity, such as walking or climbing stairs
D	Not better accounted for by another ICHD-3 diagnosis	Both of the following: • No more than one of photophobia, phonophobia or mild nausea • Neither moderate or severe nausea or vomiting
E	---	Not better accounted for by another ICHD-3 diagnosis



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**Diagnostic Criteria: Nonspecific Chronic Low Back Pain**

American College of Physicians–American Pain Society LBP Guidelines Panel

Item	Description
<b>Anatomic Location</b>	Pain occurring primarily in the low back, defined as the lumbar region between the posterior margin of the rib cage and horizontal gluteal fold
<b>Duration</b>	3 months or longer
<b>Underlying Cause/Conditions</b>	No signs of a serious underlying condition (eg, cancer, infection, cauda equina syndrome), spinal stenosis or radiculopathy, or another specific cause (eg, vertebral compression fracture, ankylosing spondylitis)
<b>Imaging Findings</b>	Degenerative changes on lumbar imaging are usually considered nonspecific, as they correlate poorly with symptoms



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**Differential Diagnoses**  
 For further reading on the differential diagnoses of COPCs, please see the linked resources.

Condition	Resources
cMig	<a href="#">Clinical Practice Guidelines: Migraine Diagnosis and Classification</a> <a href="#">Migraine: Self-Reported Symptoms and Classification (2014)</a>
cTTH	<a href="#">The Pathophysiology of Chronic Tension Headaches</a> <a href="#">Chronic Tension Headaches: Diagnosis and Management (2014)</a>
TMD	<a href="#">Research on the Prevalence of Pain Disorders: Evidence for Cross-Symptom/Disorder Overlap</a>
Valv	<a href="#">Diagnosis, Prevalence, and Clinical Characteristics of Fibromyalgia</a>
Endo	<a href="#">Endocrine Pathogenesis, Clinical Features, and Management of Cyclic Vomiting/Defecation Syndrome (CVDS)</a> <a href="#">Fibromyalgia: A Review (2014)</a>
IC/PBS	<a href="#">IC/PBS Clinical Guidelines: Diagnosis &amp; Treatment (2014)</a> <a href="#">Guidelines on the Pathology and Treatment of IC/PBS (2014)</a>
IBS	<a href="#">Diagnosis: Irritable Bowel Syndrome (IBS) - The CareA-Z (2014) (2014)</a>
FM	<a href="#">Diagnosis: Fibromyalgia (2014)</a>
ME/CFS	<a href="#">Diagnosis: Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (2014)</a>
cLRP	<a href="#">Diagnosis: Classification of Low Back Pain: Diagnostic Strategies Based on Symptom Duration, Severity, and Frequency of Low Back Pain: A Review (2014)</a> <a href="#">Diagnosis: Chronic Low Back Pain (2014)</a>

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**PainWeek**

**Biopsychosocial Assessment of COPCs**

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**Biopsychosocial Model of Health & Illness**

- Evaluates the integrated "whole person" with both the mind and body together as interconnected entities, recognizing biological, psychological and sociological components
- Accounts for dynamic interactions among the biological, psychological and sociological factors in the pain experience process
- Emphasizes illness and how one lives with, and responds to, a health condition

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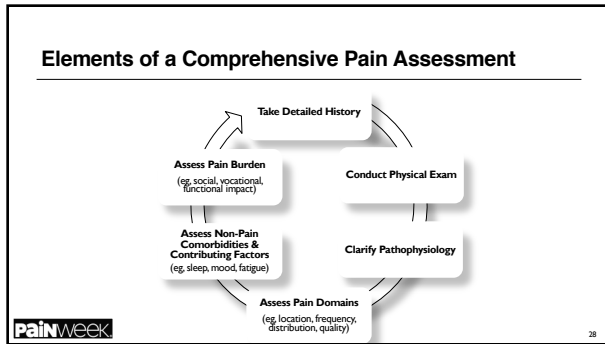
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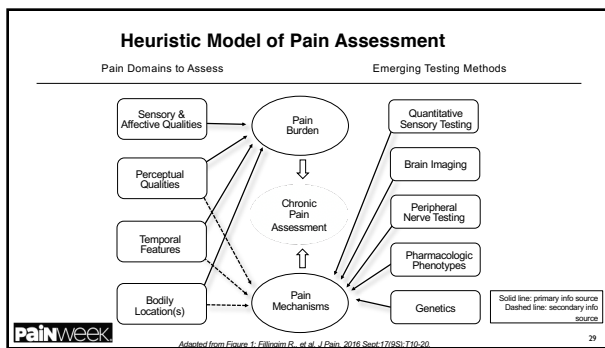
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### Approaches to Assessing Domains of Pain

Domain	Description	Recommended Measures
Sensory and Affective Qualities	Pain Intensity	Strength or "loudness" of the pain 0 (no pain) – 10 (most intense pain imaginable)
	Pain Affect	How unpleasant or disturbing the pain feels Numeric Rating Scale 0 (not at all unpleasant) – 10 (most unpleasant feeling imaginable)
Perceptual Qualities	Description of the sensory and other features of pain, how the pain feels	
	0 (not at all unpleasant) – 10 (most unpleasant feeling imaginable) (0=not at all unpleasant; 10=worst imaginable)	
Temporal Features	Pain Duration	Time since onset of chronic pain Retrospective Self-Report Q: For how long have you experienced pain most of the time?
	Pain Variability	Temporal pattern (episodic, chronic-recurrent, constant but fluctuating in intensity) Retrospective Self-Report & Daily Diaries Q: During what percentage of your waking day do you experience pain? Q: What factors improve or worsen your pain?
	Modifying Factors	Factors that exacerbate or ameliorate the pain
Bodily Locations	Areas of the body where pain is experienced; assesses how widespread the pain is	
	0 (not at all unpleasant) – 10 (most unpleasant feeling imaginable) Included in NPQ Q: Does pain radiate to other body areas? Examples include: Digital Paresthesia as part of diagnostic criteria for Fibromyalgia and Temporomandibular Disorders, Straight Leg Raise for Low Back Pain	
Other Pain Features	Provocative Pain Measures	Collected via physical exam in order to provide diagnostic information
	Pain Behaviors	Behaviors that visibly convey a person is experiencing pain Facial Expressions; Limping; Guarding; Bracing

**PainWeek** Adapted from Table 1, Fillingim R., et al. J Pain. 2016 Sept;17(9S):T10-20. 30

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### Nonpain Comorbidities & Contributing Factors

- Nonpain comorbidities are common in COPCs patients
- Chronic pain also has far-reaching impact, causing fatigue, cognitive impairment and varying degrees of physical, social and sexual dysfunction
- Certain medications and treatments for chronic pain (and/or other health conditions) can also contribute
- The interplay is highly complex and unique to each person
- A comprehensive assessment includes assessment of these conditions and factors

**Chronic Pain**

Sleep Disturbance, Mood Disorders, Sexual Dysfunction, Cognitive Impairment, Social Dysfunction, Physical Disability

**PainWeek** 31

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### Vicious Cycle

**Chronic Pain**

**Activity**  
Pain, poor sleep, mood changes and loss of energy make it difficult to be active, which leads to worsening pain

**Sleep**  
Pain makes sleeping difficult. Poor sleep or sleep disorders negatively impact pain, mood & energy levels

**Mood**  
Pain and poor sleep negatively affect mood, worsening patients' coping abilities

**Energy**  
Pain, combined with poor sleep and mood changes, drains energy

**PainWeek** 32

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### Pain & Sleep: Major Findings

1	Sleep disturbances are common among those with chronic pain.
2	Pain disrupts sleep, with difficulty falling or staying asleep, poor sleep quality, short sleep duration, and disrupted sleep architecture.
3	Sleep disturbance aggravates pain and inflammatory processes, reduces endogenous pain inhibitory responses, increases emotional distress and reduces well-being.
4	Sleep deprivation is associated with worsening neurocognitive, behavioral, metabolic and autonomic parameters, and alterations in neuroendocrine and immunoinflammatory systems.
5	Sleep deprivation increases risk of chronic conditions, including diabetes mellitus, cardiovascular disease, cancer and mortality, particularly in women.

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### Assessment of Sleep Quality

Clinical Pearls	Prevalence of sleep disorders vary by pain condition and are irregular. Insomnia, hypersomnolence, sleep apnea and restless leg syndrome may be the most common sleep disorders in those with chronic pain. Diagnostic tests differ by sleep disorder, as does treatment.
Assessment Differential Diagnosis	<p><u>Management of Common Sleep Disorders (AFP)</u></p> <p><u>Classification of Sleep Disorders</u></p> <p><u>Assessment of Psychosocial and Functional Impact of Chronic Pain</u></p>
Screening Tools	<p><u>Sleep Disorders Screening Checklist-25 A Primary Care Friendly and Comprehensive Screener for Sleep Disorders</u></p>

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### Pain & Mood: Major Findings

1	Data supports a bidirectional link between chronic pain and mood disorders. Chronic pain increases risk of developing a mood disorder and psychological variables (eg depression, anxiety, distress) are potent predictors of developing chronic pain.
2	Although psychiatric conditions can co-occur with chronic pain, negative affect (at sub-threshold levels for a mood disorder) plays an influential role in shaping pain responses and pain-related outcomes.
3	Psychological variables (eg, somatic awareness, anxiety, pain-related catastrophizing) likely reflect altered peripheral and central nervous system processing of sensory stimuli.
4	Psychological processes either exist as pre-existing "vulnerability" factors (eg, childhood trauma, distress, fear, catastrophizing) or potentially "protective" factors (eg, social support, active coping, acceptance, self-efficacy).
5	Assessment of clinical/sub-clinical depression and anxiety is essential as is assessment of maladaptive thoughts in both depressed and non-depressed patients. These include beliefs, attitudes, catastrophizing, coping, control, self-efficacy.

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### Assessment of Mood & Maladaptive Thinking

Assessment Differential Diagnosis	<p>Depression: <u>Screening for Depression (AFP)</u></p> <p>Anxiety: <u>Diagnosis and Management of Generalized Anxiety Disorder (AFP)</u></p> <p>Beliefs/Attitudes: <u>Assessment of Psychosocial &amp; Functional Impact of Chronic Pain</u></p>
Screening Tools	<p>Depression: <u>Patient Health Questionnaire-9</u></p> <p>Anxiety: <u>Generalized Anxiety Scale-7</u></p> <p>Beliefs, Attitudes, Coping: <u>Fear Avoidance Beliefs Questionnaire</u>, <u>Pain Self-Efficacy Scale</u>, <u>Ahrensford Coping Strategies Questionnaire</u></p>

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**Other Nonpain Domains Important to Assess**

Domain	Findings	Assessment	Screening Tools
Physical Function & Disability	COPCs patients report increasing levels of physical dysfunction and disability.	Assessment of Disability and Function (AD-F)	Pain Disability Index Pain Assessment of Functional Status (PAFS)
Sexual Function	COPCs, in varying degrees dependent on their bodily location and severity, can result in sexual dysfunction.	Sexual Function in Chronic Pain (SFX)	Sexual Health Questionnaire
Fatigue	Tiredness/fatigue is commonly associated with chronic pain, and is part of the symptomatology of several COPCs (eg, ME/CFS, FM).	Fatigue in Chronic Pain (FICP)	Psychological Assessment of Fatigue (PAF)
Cognitive Impairment	Cognitive impairment (in varying degrees) is experienced by those with chronic pain, and is part of the symptomatology of some COPCs (eg, FM, ME/CFS).	Functional Cognitive Impairment (FCI)	Psychological Assessment of Fatigue (PAF)
Social Support	Social support has been shown to decrease the adverse influence of pain-related stress and facilitate coping ability.	Social Support in Chronic Pain (SSCP)	Pain Self-Management Scale (PSMS)

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**Biopsychosocial Treatment of COPCs**

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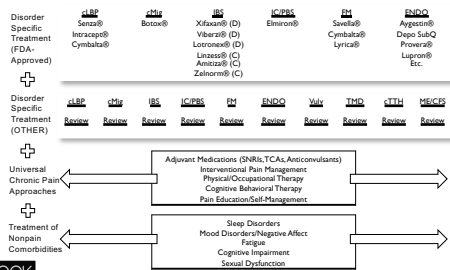
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**COPCs Treatment Paradigm**  
Selecting Components of Individualized Treatment Plan




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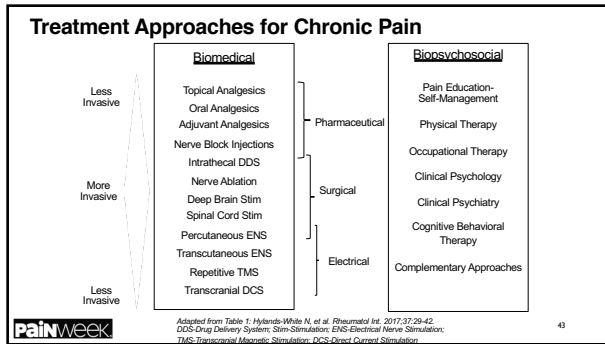
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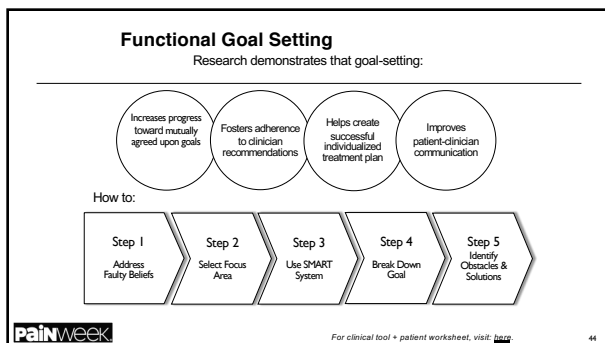
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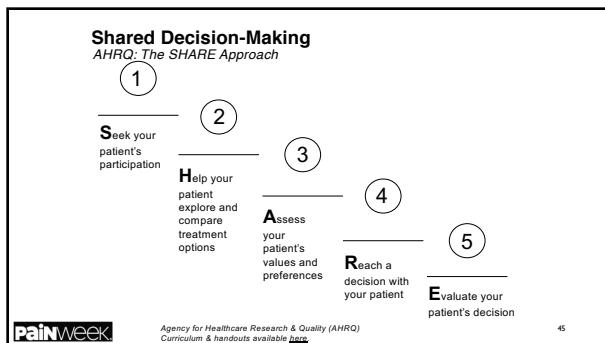
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**PainWeek**

**Summary**

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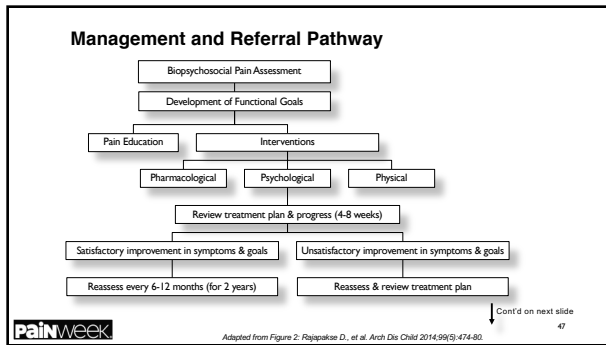
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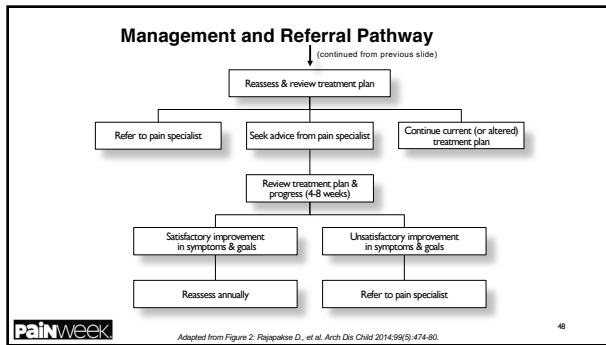
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**Key Summary Points**

1	Chronic overlapping pain conditions (COPCs) describe a set of conditions that often coexist and either predominantly or solely affect women, which share similar disease mechanisms across the neurological, endocrine, and immunological systems.
2	Large, multisite, NIH-funded studies demonstrate that COPCs comorbidity is associated with abnormalities in two general constructs: generalized sensory sensitivity and SPA,C.E. (sleep, pain, affect, cognition, energy).
3	Mounting evidence demonstrates that with increasing body sites of pain, a vicious cycle ensues, with: worsening of localized and systemic pain symptoms; decreased treatment effectiveness; reduced health and psychosocial outcomes; increased disability and costs; and markedly reduced quality of life.
4	Evidence suggests that genetic predisposition and environmental exposures combine to increase the risk of developing and maintaining COPCs, through abnormal pain amplification and emotional distress, moderated by factors from multiple body systems. COPCs are not an extension of acute pain, but considered a complex multisystem illness.
5	Most COPCs are diagnoses of exclusion, ie, they are diagnosed after known causes for pain in different body systems/locations are ruled out. Diagnostic criteria for each COPC contain elements of criteria put forth for diagnosing central sensitization.

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**Key Summary Points (cont'd)**

6	The biopsychosocial model is the most heuristic approach to chronic pain assessment and treatment, and the best foundation for tailoring a comprehensive pain management regimen to individual patients. Multimodal, interdisciplinary treatment, based on this model, is vital to addressing the complexities faced by COPCs patients.
7	Elements of a comprehensive biopsychosocial pain assessment include taking a detailed medical history and conducting a physical exam to clarify pathophysiology, if possible. Assessment of critical pain domains, along with non-pain comorbidities/domains, such as sleep, mood, cognition and fatigue, are critical, as is assessing pain's impact on physical, social and sexual function.
8	Developing functional goals that patients can begin to work towards between visits has been shown to foster adherence to clinician recommendation and improve patient-clinician communication, among other benefits. It is an important part of a successful individualized treatment plan for COPCs patients.
9	An individualized treatment plan for COPCs patients includes a combination of FDA-approved treatment options (available for 6 of 10 COPCs); other disorder-specific approaches; universal chronic pain treatment approaches; and treatment for non-pain comorbidities, such as sleep and mood disorders.

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**Resources**

- Companion Patient Self-Help Guidebook, available at: <http://chronicpainresearch.org/Resources>
- COPCs Brochure, available at: <http://chronicpainresearch.org/Resources>
- Electronic Newsletter, COPCs Research Advances, provides abstracts of recently published studies on the epidemiology, pathophysiology and clinical management of COPCs. Available at: [http://chronicpainresearch.org/New\\_Findings](http://chronicpainresearch.org/New_Findings)
- CPRA White Paper: Impact of Chronic Overlapping Pain Conditions on Public Health and the Urgent Need for Safe and Effective Treatment: 2015 Analysis and Policy Recommendations, available at: <http://chronicpainresearch.org/Resources>
- CPRA Web Site: [www.chronicpainresearch.org](http://www.chronicpainresearch.org)
- International Pelvic Pain Site: [www.pelvicpain.org](http://www.pelvicpain.org)

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