None
Objectives

1. Identify differences between the 1990, 2010/2011, and 2016 American College of Rheumatology criteria for fibromyalgia
2. Recognize scenarios that may warrant a specialty referral for fibromyalgia
3. Review nonpharmacologic and pharmacologic treatments utilized in fibromyalgia
Fibromyalgia (FM)

- Overview
- Criteria
- Management
Fibromyalgia Overview

• Overview
• Criteria
• Management
Fibromyalgia Overview

- Global prevalence is 2.7% (4.2% female, 1.4% male)\(^1\)
- Up to 1 in 20 patients have FM symptoms in primary care\(^2\)
- Diagnosis may be delayed by 2 years\(^3\)
- Considered a centralized pain state\(^4\)
  - Central nervous system origins or amplification of pain
  - Allodynia - heightened sensitivity to stimuli
  - Hyperalgesia – heightened response to painful stimuli
- Familial predisposition as supported by family and twin studies
- Biologic basis for fibromyalgia as evidenced by functional, chemical, and structural brain neuroimaging and CSF analysis

Fibromyalgia Criteria

• Overview
• Criteria
• Management
Fibromyalgia Criteria

1. 1977 – Smythe and Moldofksy – nonrefreshing sleep, tender point count, and “widespread aching pain.”

2. 1981 – Yunus, et al – tender points and “presence of generalized aches and pains involving 3 or more anatomic sites.”


1990 ACR criteria for the classification of FM

• 11 of 18 (61%) tender points
• 4kg of force exerted by palpating finger or thumb
• Chronic widespread pain (CWP)
  • 3 months or more
  • 4 quadrant plus axial pain

Official recognition leads to legitimization
• ICD, NIH funding, studies, pt groups
1990 ACR criteria concerns

- Tender point survey often not performed
- Measurement and repeatability of 4kg of force is difficult
- Women overrepresented by tender point survey alone
  - ~ 7:1 F:M ratio\(^1\)
  - Healthy normal females had significantly lower pressure pain thresholds than male counterparts at all FM tender points sites by algometer measurement\(^2\)
- Non-pain symptoms not represented
  - Fatigue reported > 90% and sleep disturbance reported > 80% in international survey\(^3\)
- May only have moderate agreement with clinical diagnoses made in routine clinical practice\(^4\)

2010/2011 Preliminary Fibromyalgia Diagnostic Criteria

- CWP, fatigue, sleep and cognitive disturbance, and somatic symptoms
- Patient reported Widespread Pain Index (WPI)
- 2010 – Patient reporting and physician rating combine to provide Symptom Severity Score (SSS)
- 2011 – Patient reporting only for SSS

1. WPI ≥ 7 AND SS ≥ 5  OR  WPI 3-6 AND SS ≥ 9
2. Symptoms for at least 3 months
3. Patient does not have a disorder that otherwise explains the pain
### Table 4. Fibromyalgia diagnostic criteria

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A patient satisfies diagnostic criteria for fibromyalgia if the following 3 conditions are met:</td>
</tr>
<tr>
<td>1) Widespread pain index (WPI) ≥7 and symptom severity (SS) scale score ≥5 or WPI 3–6 and SS scale score ≥9.</td>
</tr>
<tr>
<td>2) Symptoms have been present at a similar level for at least 3 months.</td>
</tr>
<tr>
<td>3) The patient does not have a disorder that would otherwise explain the pain.</td>
</tr>
</tbody>
</table>

### Ascertainment

<table>
<thead>
<tr>
<th>1) WPI: note the number areas in which the patient has had pain over the last week. In how many areas has the patient had pain? Score will be between 0 and 19.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder girdle, left</td>
</tr>
<tr>
<td>Shoulder girdle, right</td>
</tr>
<tr>
<td>Upper arm, left</td>
</tr>
<tr>
<td>Upper arm, right</td>
</tr>
<tr>
<td>Lower arm, left</td>
</tr>
<tr>
<td>Lower arm, right</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2) SS scale score:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
</tr>
<tr>
<td>Waking unrefreshed</td>
</tr>
<tr>
<td>Cognitive symptoms</td>
</tr>
<tr>
<td>For the each of the 3 symptoms above, indicate the level of severity over the past week using the following scale:</td>
</tr>
<tr>
<td>0 = no problem</td>
</tr>
<tr>
<td>1 = slight or mild problems, generally mild or intermittent</td>
</tr>
<tr>
<td>2 = moderate, considerable problems, often present and/or at a moderate level</td>
</tr>
<tr>
<td>3 = severe: pervasive, continuous, life-disturbing problems</td>
</tr>
<tr>
<td>Considering somatic symptoms in general, indicate whether the patient has:*</td>
</tr>
<tr>
<td>0 = no symptoms</td>
</tr>
<tr>
<td>1 = few symptoms</td>
</tr>
<tr>
<td>2 = a moderate number of symptoms</td>
</tr>
<tr>
<td>3 = a great deal of symptoms</td>
</tr>
<tr>
<td>The SS scale score is the sum of the severity of the 3 symptoms (fatigue, waking unrefreshed, cognitive symptoms) plus the extent (severity) of somatic symptoms in general. The final score is between 0 and 12.</td>
</tr>
</tbody>
</table>

* Somatic symptoms that might be considered: muscle pain, irritable bowel syndrome, fatigue/weakness, thinking or remembering problem, muscle weakness, headache, pain/cramps in the abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud’s phenomenon, hives/wells, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms.
Physician rated somatic symptoms (0-3)

Somatic symptoms that might be considered: Muscle pain, irritable bowel syndrome, fatigue/tiredness, thinking or remembering problem, muscle weakness, headache, pain/cramps in abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud’s phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms
Widespread Pain Index
(1 point per check box; score range: 0-19 points)

1. Please indicate if you have had pain or tenderness during the past 7 days in the areas shown below.

Check the boxes in the diagram for each area in which you have had pain or tenderness.

Right jaw □ □ □ □ Left jaw □ □ □ □
Right shoulder □ □ □ □ Left shoulder □ □ □ □
Right upper arm □ □ □ □ Upper back □ □ □ □
Right lower arm □ □ □ □ Lower back □ □ □ □
Right upper leg □ □ □ □ Lower leg □ □ □ □
Right lower leg □ □ □ □ Left lower leg □ □ □ □

Symptom Severity
(score range: 0-12 points)

2. For each symptom listed below, use the following scale to indicate the severity of the symptom during the past 7 days.

- No problem
- Slight or mild problem: generally mild or intermittent
- Moderate problem: considerable problems; often present and/or at a moderate level
- Severe problem: continuous, life-disturbing problems

<table>
<thead>
<tr>
<th>Points</th>
<th>No problem</th>
<th>Slight or mild problem</th>
<th>Moderate problem</th>
<th>Severe problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fatigue</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>B. Trouble thinking or remembering</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>C. Waking up tired (unrefreshed)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

3. During the past 6 months have you had any of the following symptoms?

<table>
<thead>
<tr>
<th>Points</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Pain or cramps in lower abdomen</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>B. Depression</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>C. Headache</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Additional criteria (no score)

4. Have the symptoms in questions 2 and 3 and widespread pain been present at a similar level for at least 3 months?

| No | Yes |

5. Do you have a disorder that would otherwise explain the pain?

| No | Yes |
2016 Revisions to the 2010/2011 criteria

• Adds Generalized pain via regions to eliminate Regional Pain Syndromes as a confounder
  • Left upper (region 1)
  • Right upper (region 2)
  • Left lower (region 3)
  • Right lower (region 4)
  • Axial (region 5)
• Adds that other conditions do not invalidate fibromyalgia

1. Generalized pain – present in at least 4 or 5 regions
2. Symptoms for at least 3 months
3. WPI > 7 AND SS > 5 OR WPI 3-6 AND SS ≥ 9
4. A diagnosis of fibromyalgia is valid irrespective of other diagnoses. A diagnosis of fibromyalgia does not exclude the presence of other clinically important illnesses
### Criteria
A patient satisfies modified 2016 fibromyalgia criteria if the following 3 conditions are met:

1. Widespread pain index (WPI) \( \geq 7 \) and symptom severity scale (SSS) score \( \geq 5 \) OR WPI of 4–6 and SSS score \( \geq 9 \).
2. Generalized pain, defined as pain in at least 4 of 5 regions, must be present. Jaw, chest, and abdominal pain are not included in generalized pain definition.
3. Symptoms have been generally present for at least 3 months.
4. A diagnosis of fibromyalgia is valid irrespective of other diagnoses. A diagnosis of fibromyalgia does not exclude the presence of other clinically important illnesses.

### Ascertainment

1. **WPI:** note the number of areas in which the patient has had pain over the last week. In how many areas has the patient had pain? Score will be between 0 and 19:
   - **Left upper region (Region 1)**
   - **Right upper region (Region 2)**
   - **Axial region (Region 5)**
   - **Shoulder girdle, left**
   - **Jaw, right**
   - **Neck**
   - **Upper arm, left**
   - **Upper arm, right**
   - **Upper back**
   - **Lower arm, left**
   - **Lower arm, right**
   - **Lower back**
   - **Shoulder girdle, right**
   - **Upper leg, left**
   - **Upper leg, right**
   - **Chest**
   - **Hip (buttock, trochanter), left**
   - **Abdomen**
   - **Hip (buttock, trochanter), right**
   - **Lower leg, left**
   - **Lower leg, right**

2. **Symptom severity scale (SSS) score**
   - Fatigue
   - Walking unrefreshed
   - Cognitive symptoms
   
   For the each of the 3 symptoms above, indicate the level of severity over the past week using the following scale:
   
   0 = No problem
   1 = Slight or mild problems, generally mild or intermittent
   2 = Moderate, considerable problems, often present and/or at a moderate level
   3 = Severe: pervasive, continuous, life-disturbing problems

The **symptom severity scale (SSS) score** is the sum of the severity scores of the 3 symptoms (fatigue, walking unrefreshed, and cognitive symptoms) \( (0–9) \) plus the sum \( (0–3) \) of the number of the following symptoms the patient has been bothered by that occurred during the previous 6 months:

1. Headaches \( (0–1) \)
2. Pain or cramps in lower abdomen \( (0–1) \)
3. And depression \( (0–1) \)

The final symptom severity score is between 0 and 12

The **fibromyalgia severity (FS) scale** is the sum of the WPI and SSS.
Use of the Fibromyalgia Severity Scale (FS)

- WPI + SSS
- 0 (no symptoms) – 31 (most severe)
- FS < 12 cannot satisfy FM criteria
- Can be approximate guide to FM diagnosis
  - In populations 92-96% of those with FS score ≥ 12 satisfy FM criteria
- Can provide approximate measure of severity
- For those with previous FM diagnosis, FS score < 12 may suggest improvement
Practical assessment in the clinic

History
• Multifocal, chronic pain not fully explained by injury or inflammation

Exam
• Tender point survey
• Firm pressure over several IP joints, phalanges, and forearms
  • Pain all over or only forearms may suggest low central pain threshold
  • Tenderness at small joints only with swelling may suggest inflammatory arthritis or autoimmune disorder

Questionnaire
• 1 page 2016 questionnaire to assess WPI, SS, and FS
Practical assessment in the clinic

Lab

- No diagnostic lab
- CBC (clue for other chronic disease)
- Creatinine, calcium, AST, ALT (renal function and liver enzymes to ensure candidacy for medications, liver enzymes to clue for viral hepatitis, calcium to rule out hyperparathyroidism)
- TSH (rule out thyroid abnormality as cause of pain or somatic symptoms)
- 25-OH vitamin D (significant deficiency may be associated with osteomalacia)
- ? ESR and CRP
- ? CPK if on statin
- ANA and RF not recommended unless suspicion of Rheumatoid Arthritis or ANA-associated connective tissue disease
Specialty referral indications

- Suspected inflammatory arthritis, autoinflammatory condition, or immune-mediated defined rheumatic connective tissue disease (Rheumatology)
- Refractory to therapy (multi-disciplinary pain clinic, eg Pain and Healing Center)
- Significant comorbid psychiatric issues (Psychiatry or psychology)
- Suspected physiologic sleep disorder (Sleep Medicine)
- Neuromuscular disorder (Neurology)
Selected Indications for specialty referral of the fibromyalgia patient

<table>
<thead>
<tr>
<th>Indication for Referral</th>
<th>Suggested Specialty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient or provider concerned about systemic rheumatic disease</td>
<td>Rheumatology consult more effective than broad serologic testing</td>
</tr>
<tr>
<td>Suspected bipolar disorder suicidal ideation, or psychiatric condition other than anxiety and depression</td>
<td>Psychiatry referral before medical therapy</td>
</tr>
<tr>
<td>Ongoing psychiatric care</td>
<td>Coordinate all medication therapy with psychiatrist</td>
</tr>
<tr>
<td>Narcotic-dependent pain</td>
<td>Pain specialist</td>
</tr>
<tr>
<td>Suspected statin myalgia in patient with known cardiovascular disease</td>
<td>Consultation with the specialty treating vascular problem to consider drug holiday or alternate therapy</td>
</tr>
<tr>
<td>Prominent neurologic symptoms or suspicion of primary muscle disorder</td>
<td>Neurology referral</td>
</tr>
<tr>
<td>Administrative disability claim</td>
<td>Referral to physician with training in disability evaluations</td>
</tr>
<tr>
<td>Inability to do even limited exercise</td>
<td>Psychiatry and/or physical therapy</td>
</tr>
<tr>
<td>Provider or patient concern about chronic infection</td>
<td>Referral to Infectious Diseases</td>
</tr>
</tbody>
</table>

Higgs JB. Primary Care: Clinics in Office Practice. 2018
Fibromyalgia Management

• Overview
• Criteria
• Management
Assert the diagnosis

• Establishing diagnosis can provide substantial relief to patients

• Decreased healthcare costs with fewer referrals and diagnostic testing after diagnosis of FM made

• Not just a diagnosis of exclusion

Start with nonpharmacologic management

• Best studied non-pharmacologic interventions (1A level of evidence)
  • Education
  • Cognitive behavioral therapy
  • Exercise

• Magnitude of treatment response often exceeds pharmaceuticals

• Greatest benefit observed is in domain of improved function$^{1,2}$

• Population survey suggests patients feel non-pharmacologic treatments most effective for relief of FM symptoms$^3$

Education

• Central pain, decreased pain threshold
• Not a destructive arthritis
• Multiple education visits or goal-setting visits
  • Condition, sleep, exercise, mood

• External education
  • Support groups, Arthritis Foundation
  • University of Michigan FibroGuide
    • https://fibroguide.med.umich.edu/
Pharmacologic management

• Trial of TCA compound (eg, cyclobenzaprine, amitriptyline, nortriptyline)
• Comorbid depression, consider SNRI
• Comorbid anxiety or sleep issue, consider gabapentoid
• Use of opioids discouraged
  • Endogenous opioid system is hyperactive\(^1\)
  • May worsen FM-related hyperalgesia and increase risk of opioid-induced hyperalgesia\(^2\)
• NSAIDs and acetaminophen may be used for peripheral nociceptive pain

# EULAR 2017 FM management recommendations


<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Level of evidence</th>
<th>Grade</th>
<th>Strength of recommendation</th>
<th>Agreement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overarching principles</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Optimal management requires prompt diagnosis. Full understanding of fibromyalgia</td>
<td>IV</td>
<td>D</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>requires comprehensive assessment of pain, function and psychosocial context.</td>
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<tr>
<td>It should be recognised as a complex and heterogeneous condition where there</td>
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<tr>
<td>is abnormal pain processing and other secondary features. In general, the</td>
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<tr>
<td>management of FM should take the form of a graduated approach.</td>
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<tr>
<td>Management of fibromyalgia should aim at improving health-related quality of</td>
<td>IV</td>
<td>D</td>
<td></td>
<td>100</td>
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<tr>
<td>life balancing benefit and risk of treatment that often requires a</td>
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<tr>
<td>multidisciplinary approach with a combination of non-pharmacological and</td>
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<tr>
<td>pharmacological treatment modalities tailored according to pain intensity,</td>
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<tr>
<td>function, associated features (such as depression), fatigue, sleep</td>
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<tr>
<td>disturbance and patient preferences and comorbidities by shared decision-</td>
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<tr>
<td>making with the patient. Initial management should focus on non-pharmacological</td>
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<tr>
<td>therapies.</td>
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<tr>
<td><strong>Specific recommendations</strong></td>
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<tr>
<td><strong>Non-pharmacological management</strong></td>
<td></td>
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<tr>
<td>Aerobic and strengthening exercise</td>
<td>la</td>
<td>A</td>
<td>Strong for</td>
<td>100</td>
</tr>
<tr>
<td>Cognitive behavioural therapies</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>100</td>
</tr>
<tr>
<td>Multicomponent therapies</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>93</td>
</tr>
<tr>
<td>Defined physical therapies: acupuncture or hydrotherapy</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>93</td>
</tr>
<tr>
<td>Meditative movement therapies (qigong, yoga, tai chi) and mindfulness-based</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>71–73</td>
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<tr>
<td>stress reduction</td>
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<tr>
<td><strong>Pharmacological management</strong></td>
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<tr>
<td>Amitriptyline (at low dose)</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>100</td>
</tr>
<tr>
<td>Duloxetine or milnacipran</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>100</td>
</tr>
<tr>
<td>Tramadol</td>
<td>lb</td>
<td>A</td>
<td>Weak for</td>
<td>100</td>
</tr>
<tr>
<td>Pregabalin</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>94</td>
</tr>
<tr>
<td>Cyclobenzaprine</td>
<td>la</td>
<td>A</td>
<td>Weak for</td>
<td>75</td>
</tr>
</tbody>
</table>

*Percentage of working group scoring at least 7 on 0–10 numerical rating scale assessing agreement.*
Key References

Thank you

Raymond Hong, MD, MBA