

## Course Objectives

The goal of this program is to provide nurses with information about fibromyalgia — its proposed causes, symptoms, treatment options, and research in progress. After studying the information presented here, you will be able to —

- Identify neurological abnormalities associated with fibromyalgia.
  - Identify three primary symptoms of fibromyalgia.
  - Discuss treatment options for people with fibromyalgia.
- 

What would you do if you looked great but felt terrible — for months at a time? That's what happened to Ann,\* a 37-year-old schoolteacher. Ann's family, coworkers, and friends couldn't understand why she continued to withdraw from her usual activities. Although she looked healthy, persistent pain and fatigue made her progressively unable to function. She resigned from her job and gave up recreational interests. Although Ann aggressively sought medical help to control her symptoms, it took three years for her to have a name attached to her symptoms: fibromyalgia (FM).

Ann's experience is not unusual for a person with FM. Because symptoms vary from person to person and there are no specific lab abnormalities, FM can be difficult to diagnose. Patients may spend months or years seeking an accurate diagnosis and symptom relief.<sup>1</sup> FM is not life-threatening, but it can result in significant lifestyle changes and disability for people like Ann. By learning more about this often misunderstood condition, nurses can help provide education and support to people with FM.<sup>1</sup>

FM has some similarities with arthritis, but because it doesn't produce joint inflammation or damage, it's not a true type of arthritis. However, like arthritis, FM is classified as a rheumatic condition because it affects joints and soft tissues and causes chronic pain.<sup>2</sup> Since 1990, the [American College of Rheumatology](#) has recognized FM as a chronic painful noninflammatory condition affecting muscles.

About 6 million Americans have FM. It affects all racial groups, and although 90% of people with a diagnosis of FM are women, the syndrome also affects men and children.<sup>2</sup>

## What goes wrong

Despite extensive research, the etiology and pathophysiology of FM are not completely understood.<sup>3</sup> Most researchers believe that abnormalities in the body's neurotransmitters cause FM. An increasing number of studies are showing multiple neurological abnormalities in people with FM, including increased levels of [substance P](#), a neurotransmitter that intensifies pain perception, and low levels of serotonin and tryptophan in the central nervous system.<sup>4</sup> Serotonin, a neurotransmitter synthesized from the amino acid tryptophan, plays an important role in regulating mood and a sense of well-being. Altered serotonin levels are associated with depression, bipolar disorder, and anxiety.<sup>5</sup> It's thought that when serotonin levels are low and substance P levels are high, people are hypersensitive to stimuli that are not normally painful. Some experts propose that people with FM experience as much pain as do people with rheumatoid arthritis (RA).<sup>5</sup> Researchers have also reported abnormalities in the hypothalamic-pituitary-adrenal axis in people with FM. Alterations in the HPA axis, part of the body's endocrine system, can result in abnormal nervous system responses to stimuli and may be responsible for the sleep problems that people with FM often report.<sup>3</sup> Researchers have also observed a genetic susceptibility to FM. People with other rheumatic diseases, such as RA, systemic lupus erythematosus, or ankylosing spondylitis, are more likely to have FM.<sup>2</sup> The onset of FM can be slow and progressive. But in many people, the first onset of symptoms can be traced to a physical illness or injury or a psychologically stressful event.<sup>2</sup>

## The troublesome triad

Nearly all patients with FM experience its three hallmark symptoms: pain, sleep disturbances, and fatigue.<sup>3</sup> The American College of Rheumatology cites two major diagnostic criteria for FM: a history of widespread pain for at least three months and patient report of tenderness in at least 11 of 18 defined tender points.<sup>3</sup> FM pain centers on tender points, specific areas on the body that are painful when gently palpated. People with FM pain describe it as throbbing, deep muscular aching, twitching, stabbing, or shooting. Pain and stiffness are often worse in the morning.<sup>4</sup> A daily pain diary tracking the frequency, severity, and impact of pain may be useful in assessing how pain influences ADLs.<sup>3</sup> FM produces myofascial pain. The broad muscles are enclosed with myofascia, a thin translucent film that wraps muscle tissue, gives shape to muscle groups, and holds them together. In FM, it's proposed that the myofascia tightens and forms fibrous bands, compressing nerves and blood vessels and producing muscle pain.<sup>5</sup>

People with FM have a sleep disorder that prevents them from getting restorative sleep. Many waken from sleep or rest as tired as

they were when they lay down. People with FM usually describe problems with falling asleep or frequent waking. Researchers have documented specific and distinctive abnormalities in the Stage 4 deep sleep of FM patients. (Nonrapid eye movement sleep occurs in four stages, from Stage 1 — a feeling of sleepiness — to Stage 4 — deep sleep that restores energy and prepares a person with energy to begin a new day.)

Most people with FM have an alpha-delta sleep anomaly. Brain cells generate alpha wave activity during waking hours and delta waves during sleep. As a person moves from Stage 1 to Stage 2 sleep, both alpha and delta sleep waves occur; however, delta waves predominate as sleep deepens. Stage 4 consists of generally uninterrupted delta waves. In people with FM, alpha waves interrupt and lighten Stage 4 sleep. As a result, people with FM are constantly interrupted by bursts of “awakelike” brain activity, limiting the time they spend in deep sleep.<sup>4,6</sup> Delta, or slow wave, sleep allows the body to repair itself and helps immune function. The chronic sleep deprivation caused by this sleep anomaly can exacerbate chronic pain and daytime fatigue.<sup>4,6</sup> Disabling fatigue is often profound in the morning, despite adequate sleep, and worsens again in the afternoon. People also report disorienting and frustrating problems with cognition and memory, or “fibro fog.”<sup>5</sup> People with these problems may report difficulty with organizing, planning, meeting goals, word finding, and learning and retaining information.<sup>5</sup>

## Delays and difficulties

People with FM often delay seeking treatment or think clinicians don't take their symptoms seriously.<sup>7</sup> The [National Fibromyalgia Association](#), an advocacy group, estimates that it takes an average of five years for a FM patient to obtain an accurate diagnosis.

An FM diagnosis is made by a combination of patient history, physical examination, laboratory evaluations, and exclusion of other causes. The nurse should take a careful history with a focus on sleep/fatigue, pain, mood, and exercise or activity intolerance.<sup>5</sup> In nearly all cases, people with FM appear healthy. But often they are different physically: They may have gained or lost weight, physical tone and fitness level are generally worsened, and telltale but subtle signs exist, especially for those in severe pain and who suffer from a severe lack of restorative sleep.

Laboratory and other diagnostic tests may not help establish an FM diagnosis, but they can help rule out other conditions, such as thyroid disease, systemic lupus erythematosus, and Lyme disease, that may account for some symptoms.<sup>1</sup> In addition to pain, sleep disturbances, and fatigue, people with FM may experience temperature sensitivity, headaches, irritable bowel syndrome, menstrual pain, numbness or tingling in the extremities, restless leg syndrome, and cognitive and memory problems.<sup>1,2</sup>

Although FM is one of the most common conditions associated with musculoskeletal pain, obtaining an accurate and timely diagnosis can be frustrating. Even finding a health care professional who agrees that the patient has a problem with a physical basis can be a challenge. But because no generally accepted diagnostic tests for FM exist and symptoms vary in frequency and severity, health care providers might conclude that a patient's pain or other symptoms are not real, or they might tell the patient there is little that can be done.<sup>2,4</sup> FM may overlap with other chronic pain and fatiguing conditions, such as chronic fatigue syndrome and irritable bowel syndrome.<sup>7</sup> People with FM symptoms may describe nonspecific symptoms as opposed to objective signs and become angry with health care providers as they seek to establish a diagnosis.<sup>5</sup> The time and energy involved in trying to find a diagnosis frustrate health care providers as well as patients — at best providers can only help manage patients' chronic, disabling, and “invisible” illness; FM and related disorders tend to be intractable and are not likely to resolve themselves or readily be cured.

Depression is common in people with FM.<sup>7</sup> Alterations in one's role in the family, a loss of enjoyment of vocational or recreational interests, and an inability to participate in everyday activities can lead to feelings of sadness and depression. About 25% to 30% of patients with FM meet diagnostic criteria for major depression.<sup>7</sup> It's often difficult to determine whether depression is due to alterations in neurotransmitters or the person's response to chronic pain and other FM symptoms.

## What helps

Medications to relieve muscle pain and promote sleep, moderate physical exercise, education, and psychological support can improve FM symptoms.<sup>2,3</sup> New FM treatment guidelines from the American Pain Society recommend an approach combining patient education, drug therapy, exercise, and cognitive-behavioral therapy.<sup>8</sup> The FDA has not approved any medications specifically for FM, but medications used for other conditions are often prescribed.

Pharmacological therapy has been most successful with CNS agents, including antidepressants, muscle relaxants, and anticonvulsants.<sup>9</sup> These agents affect neurotransmitters thought to be associated with producing FM symptoms. Most people with FM initially receive antidepressant medications. The strongest research evidence for modifying FM symptoms is with tricyclic antidepressants, such as amitriptyline (Elavil) and doxepin (Sinequan), usually given in doses lower than those used to treat depression.<sup>1,3,9</sup> Higher doses are given when clinical depression is present.<sup>5</sup>

Some evidence suggests that the selective serotonin reuptake inhibitors (SSRIs) fluoxetine (Prozac) and sertraline (Zoloft), also prescribed in lower doses for FM than for depression, can be effective in improving mood and fatigue level.<sup>3,9</sup> By promoting the release of serotonin, these drugs may reduce fatigue and some other FM symptoms. Some newer antidepressants, known as mixed reuptake inhibitors, raise levels of both serotonin and norepinephrine. Venlafaxine (Effexor) and nefazodone (Serzone) are examples of mixed reuptake inhibitors that are being studied for their effectiveness in treating FM symptoms.<sup>2</sup> Muscle relaxants, such as cyclobenzaprine (Flexeril), carisoprodol (Soma), or tizanidine (Zanaflex), can be used to treat sleep disturbances, fatigue, pain, and

depression.<sup>1</sup>

Analgesics — ranging from over-the-counter medications, such as acetaminophen, to prescription medications, such as tramadol (Ultram) — may also be used for pain. Tramadol acts as a weak opioid agonist and inhibits the reuptake of serotonin and norepinephrine.<sup>1</sup> Because FM is not an inflammatory condition, NSAIDs have not been proven effective when used alone. However, NSAIDs may be useful in combination with analgesics. Tramadol and acetaminophen given together have been effective in some people in reducing muscle pain.<sup>5</sup>

Cardiovascular exercise helps by improving mood and physical function.<sup>3,9</sup> An important aspect of pain management is a regular program of gentle exercises and stretching to maintain muscle tone and reduce pain and stiffness. The benefits of exercise for people with FM was first recognized 20 years ago, when studies showed that people with FM who participated in high-intensity exercise had greater improvements in fitness and tender point pain than did those who participated in flexibility training alone.<sup>9</sup> Exercises such as swimming and water aerobics may be especially beneficial and well tolerated.

People with FM have different levels of function, severity of symptoms, and physical conditioning; health care professionals with expertise in managing FM should individualize exercise prescriptions. A walking routine (with a gradual buildup to 10 to 20 minutes three times a week) and gentle aerobics are land-based aerobic exercises that often benefit people with FM. Adaptive yoga and tai chi, nonaerobic exercises, are beneficial for toning and stretching. The key is gentle rather than vigorous exercise.<sup>5</sup>

People with FM generally cannot exercise with the same vigor as healthy people their age. As a result, people with FM may prefer to exercise alone or with others who have chronic illnesses.<sup>5</sup> But the fact remains: Regular, gentle, and moderate exercise is a treatment for FM and one a person can control and optimize.

A sleep regimen can help people with FM. Strategies may include going to bed and getting up at the same time each day; ensuring that the sleep environment is quiet; having a comfortable room temperature and supportive bed; avoiding caffeine, sugar, and alcohol before bed; doing light exercise during the day; avoiding eating immediately before bedtime; and practicing relaxation exercises to get to sleep more easily.<sup>4</sup> When necessary, sleep medication can help reduce sleep problems, such as periodic limb movement disorder, which is characterized by rhythmic movement of the arms or legs during sleep.<sup>4,10</sup> Tricyclic antidepressants can reduce the number of alpha waves during Stage 4 sleep, thus promoting restful sleep.<sup>1</sup>

The person with FM has varying needs for psychological support — professional, personal, and social. Most experts believe that people with FM symptoms experience a significantly greater amount of daily stress than those without the condition.<sup>3</sup> Often those close to a person with FM can't understand why she or he looks so healthy but cannot participate in many normal activities. People with FM need to develop strategies for communicating to others about FM and the way it can affect daily life. Psychological and behavioral therapies, most particularly short-term cognitive therapy, are increasingly being used in the treatment of FM. These treatment therapies can help patients manage psychological and social problems related to FM.<sup>3</sup> When those problems are under better control, patients may find it easier to manage symptoms. Intensive patient education and cognitive-behavioral therapy — a psychological intervention that helps increase confidence in one's abilities and teaches methods for dealing with stress and chronic illness — are effective in treating FM.<sup>9</sup> Government and professional groups offer education for patients, families, and health care providers. Advocacy groups provide resource information and can recommend local support groups.

## Learning more

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) research on FM ranges from basic laboratory research aimed at understanding neurological abnormalities to studies of medications and interventions to relieve pain, improve sleep, and modify other symptoms.<sup>2</sup> Research has shown that people with FM have decreased blood flow to parts of the brain that normally process pain. One research project is using positive emission tomography (PET) to compare blood flow in the brains of women with and without FM. Female reproductive hormones may be involved in the pain that women with FM experience. Another project is studying the role of sex hormones in pain sensitivity, reactions to stress, and symptom perception at various points in the menstrual cycle.<sup>2</sup> Evidence suggests that the way a person responds to physical or emotional stress can trigger or exacerbate FM symptoms. To better understand this relationship, researchers are examining chemical interactions between the nervous and endocrine systems. Researchers are also studying ways to improve sleep for people with FM. NIAMS has also recently funded the first study of a drug treatment specifically for FM. The study will investigate the effects of the anticonvulsant drug gabapentin (Neurontin) on FM symptoms. Gabapentin has been found to relieve chronic pain caused by CNS disorders and has received FDA approval for treating the severe pain following an episode of herpes zoster.<sup>2</sup>

Despite FM's chronic and complex course, pharmacological and nonpharmacological treatment can decrease symptoms and associated disability. Based on current research, a treatment program that combines education; medications, such as low-dose tricyclic antidepressants, SSRIs, and anticonvulsants; exercise; and cognitive therapy is recommended.<sup>9</sup> Although the exact cause of FM is not yet known and ways to treat symptoms require study, nurses can still help people with this distressing condition. Nurses can inform people like Ann that researchers are increasingly validating patients' complaints of pain and other FM symptoms. Listening carefully to people who report FM symptoms, referring them for medical evaluation, and suggesting FM resources are actions nurses can take to help those with FM cope with this chronic condition.

*\*Patient's name and identifying details have been changed.*

*Maureen Habel, RN, MA, a certified rehabilitation registered nurse, has been a director of nursing staff development and director of clinical nursing services and has taught health care management and leadership courses. She is an award-winning nursing writer in Long Beach, Calif. (The author has declared no real or perceived conflicts of interest that relate to this educational activity.)*

---

COPYRIGHT © 2006 NURSING SPECTRUM/NURSEWEEK