Questions & Answers about . . .

Fibromyalgia

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
National Institutes of Health
Public Health Service • U.S. Department of Health and Human Services

Additional copies of this booklet are available from

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NIAMS/National Institutes of Health
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Bethesda, MD 20892–3675

You can also find this booklet on the NIAMS Web site at www.niams.nih.gov/hi/topics/fibromyalgia/fibrofs.htm

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What Is Fibromyalgia?

Fibromyalgia syndrome is a common and chronic disorder characterized by widespread muscle pain, fatigue, and multiple tender points. The word *fibromyalgia* comes from the Latin term for fibrous tissue (*fibro*) and the Greek ones for muscle (*myo*) and pain (*algia*). Tender points are specific places on the body – on the neck, shoulders, back, hips, and upper and lower extremities – where people with fibromyalgia feel pain in response to slight pressure.

Although fibromyalgia is often considered an arthritis-related condition, it is not truly a form of arthritis (a disease of the joints) because it does not cause inflammation or damage to the joints, muscles, or other tissues. Like arthritis, however, fibromyalgia can cause significant pain and fatigue, and it can interfere with a person's ability to carry on daily activities. Also like arthritis, fibromyalgia is considered a rheumatic condition.

You may wonder what exactly *rheumatic* means. Even physicians do not always agree on whether a disease is considered rheumatic. If you look up the word in the dictionary, you'll find it comes from the Greek word *rheum*, which means *flux* – not an explanation that gives you a better understanding. In medicine, however, the term *rheumatic* means a medical condition that impairs the joints and/or soft tissues and causes chronic pain.

In addition to pain and fatigue, people who have fibromyalgia may experience

- sleep disturbances,
- morning stiffness,
- headaches,
- irritable bowel syndrome,
- painful menstrual periods,
- numbness or tingling of the extremities,
- restless legs syndrome,
- temperature sensitivity,
- cognitive and memory problems (sometimes referred to as "fibro fog"), or
- a variety of other symptoms.

Fibromyalgia is a syndrome rather than a disease. Unlike a disease, which is a medical condition with a specific cause or causes and recognizable signs and symptoms, a syndrome is a collection of signs, symptoms, and medical problems that tend to occur together but are not related to a specific, identifiable cause.

Who Gets Fibromyalgia?

According to a paper published by the American College of Rheumatology (ACR), fibromyalgia affects 3 to 6 million – or as many as one in 50 – Americans. For unknown reasons, between 80 and 90 percent of those diagnosed with fibromyalgia are women; however, men and children also can be affected. Most people are diagnosed during middle age, although the symptoms often become present earlier in life.

People with certain rheumatic diseases, such as rheumatoid arthritis, systemic lupus erythematosus (commonly called lupus), or ankylosing spondylitis (spinal arthritis) may be more likely to have fibromyalgia, too.

Several studies indicate that women who have a family member with fibromyalgia are more likely to have fibromyalgia themselves, but the exact reason for this – whether it be hereditary or caused by environmental factors or both – is unknown. One study supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) is trying to identify if certain genes predispose some people to fibromyalgia. (See *What Are Researchers Learning About Fibromyalgia?* page 18.)

What Causes Fibromyalgia?

The causes of fibromyalgia are unknown, but there are probably a number of factors involved. Many people associate the development of fibromyalgia with a physically or emotionally stressful or traumatic event, such as an automobile

accident. Some connect it to repetitive injuries. Others link it to an illness. People with rheumatoid arthritis and other autoimmune diseases, such as lupus, are particularly likely to develop fibromyalgia. For others, fibromyalgia seems to occur spontaneously.

Many researchers are examining other causes, including problems with how the central nervous system (the brain and spinal cord) processes pain.

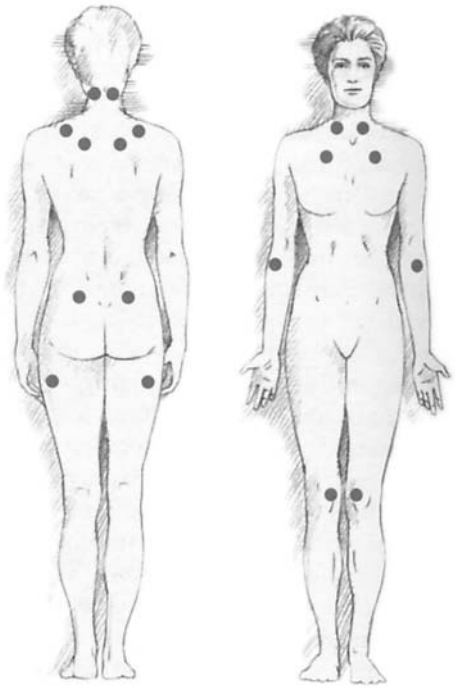
Some scientists speculate that a person's genes may regulate the way his or her body processes painful stimuli. According to this theory, people with fibromyalgia may have a gene or genes that cause them to react strongly to stimuli that most people would not perceive as painful. However, those genes – if they, in fact, exist – have not been identified.

How Is Fibromyalgia Diagnosed?

Research shows that people with fibromyalgia typically see many doctors before receiving the diagnosis. One reason for this may be that pain and fatigue, the main symptoms of fibromyalgia, overlap with many other conditions. Therefore, doctors often have to rule out other potential causes of these symptoms before making a diagnosis of fibromyalgia. Another reason is that there are currently no diagnostic laboratory tests for fibromyalgia; standard laboratory tests fail to reveal a physiologic reason for pain. Because there is no generally accepted, objective test for

fibromyalgia, some doctors unfortunately may conclude a patient's pain is not real, or they may tell the patient there is little they can do.

A doctor familiar with fibromyalgia, however, can make a diagnosis based on two criteria established by the ACR: a history of widespread pain lasting more than 3 months and the presence of tender points. Pain is considered to be widespread when it affects all four quadrants of the body; that is, you must have pain in both your right and left sides as well as above and below the waist to be diagnosed with



The location of the nine paired tender points that comprise the 1990 American College of Rheumatology criteria for fibromyalgia.

fibromyalgia. The ACR also has designated 18 sites on the body as possible tender points. For a fibromyalgia diagnosis, a person must have 11 or more tender points. (See illustration on page 5.) One of these predesignated sites is considered a true tender point only if the person feels pain upon the application of 4 kilograms of pressure to the site. People who have fibromyalgia certainly may feel pain at other sites, too, but those 18 standard possible sites on the body are the criteria used for classification.

How Is Fibromyalgia Treated?

Fibromyalgia can be difficult to treat. Not all doctors are familiar with fibromyalgia and its treatment, so it is important to find a doctor who is. Many family physicians, general internists, or rheumatologists (doctors who specialize in arthritis and other conditions that affect the joints or soft tissues) can treat fibromyalgia.

Fibromyalgia treatment often requires a team approach, with your doctor, a physical therapist, possibly other health professionals, and most importantly, yourself, all playing an active role. It can be hard to assemble this team, and you may struggle to find the right professionals to treat you. When you do, however, the combined expertise of these various professionals can help you improve your quality of life.

You may find several members of the treatment team you need at a clinic. There are pain clinics that specialize in

pain and rheumatology clinics that specialize in arthritis and other rheumatic diseases, including fibromyalgia.

At present, there are no medications approved by the U.S. Food and Drug Administration (FDA) for treating fibromyalgia, although a few such drugs are in development. Doctors treat fibromyalgia with a variety of medications developed and approved for other purposes.

Following are some of the most commonly used categories of drugs for fibromyalgia:

Analgesics

Analgesics are painkillers. They range from over-the-counter acetaminophen (Tylenol*) to prescription medicines, such as tramadol (Ultram), and even stronger narcotic preparations. For a subset of people with fibromyalgia, narcotic medications are prescribed for severe muscle pain. However, there is no solid evidence showing that narcotics actually work to treat the chronic pain of fibromyalgia, and most doctors hesitate to prescribe them for long-term use because of the potential that the person taking them will become physically or psychologically dependent on them.

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

As their name implies, nonsteroidal anti-inflammatory drugs, including aspirin, ibuprofen (Advil, Motrin), and

* Brand names included in this booklet are provided as examples only, and their inclusion does not mean that these products are endorsed by the National Institutes of Health or any other Government agency. Also, if a particular brand name is not mentioned, this does not mean or imply that the product is unsatisfactory.

naproxen sodium (Anaprox, Aleve), are used to treat inflammation. Although inflammation is not a symptom of fibromyalgia, NSAIDs also relieve pain. The drugs work by inhibiting substances in the body called prostaglandins, which play a role in pain and inflammation. These medications, some of which are available without a prescription, may help ease the muscle aches of fibromyalgia. They may also relieve menstrual cramps and the headaches often associated with fibromyalgia.

Antidepressants

Perhaps the most useful medications for fibromyalgia are several in the antidepressant class. Antidepressants elevate the levels of certain chemicals in the brain, including serotonin and norepinephrine (which was formerly called adrenaline). Low levels of these chemicals are associated not only with depression, but also with pain and fatigue. Increasing the levels of these chemicals can reduce pain in people who have fibromyalgia. Doctors prescribe several types of antidepressants for people with fibromyalgia, described below.

- **Tricyclic antidepressants** – When taken at bedtime in dosages lower than those used to treat depression, tricyclic antidepressants can help promote restorative sleep in people with fibromyalgia. They also can relax painful muscles and heighten the effects of the body's natural pain-killing substances called endorphins.

Tricyclic antidepressants have been around for almost half a century. Some examples of tricyclic medications used to treat fibromyalgia include amitriptyline hydrochloride (Elavil, Endep), cyclobenzaprine (Cycloflex, Flexeril, Flexiban), doxepin (Adapin, Sinequan), and nortriptyline (Aventyl, Pamelor). Both amitriptyline and cyclobenzaprine have been proved useful for the treatment of fibromyalgia.

- **Selective serotonin reuptake inhibitors** – If a tricyclic antidepressant fails to bring relief, doctors sometimes prescribe a newer type of antidepressant called a selective serotonin reuptake inhibitor (SSRI). As with tricyclics, doctors usually prescribe these for people with fibromyalgia in lower dosages than are used to treat depression. By promoting the release of serotonin, these drugs may reduce fatigue and some other symptoms associated with fibromyalgia. The group of SSRIs includes fluoxetine (Prozac), paroxetine (Paxil), and sertraline (Zoloft).

  SSRIs may be prescribed along with a tricyclic antidepressant. Doctors rarely prescribe SSRIs alone. Because they make people feel more energetic, they also interfere with sleep, which often is already a problem for people with fibromyalgia. Studies have shown that a combination therapy of the tricyclic amitriptyline and the SSRI fluoxetine resulted in greater improvements in the study participants' fibromyalgia symptoms than either drug alone.

- **Mixed reuptake inhibitors** – Some newer antidepressants raise levels of both serotonin and norepinephrine, and are therefore called mixed reuptake inhibitors. Examples of these medications include venlafaxine (Effexor) and nefazadone (Serzone). Researchers are actively studying the efficacy of these newer medications in treating fibromyalgia.

Benzodiazepines

Benzodiazepines help some people with fibromyalgia by relaxing tense, painful muscles and stabilizing the erratic brain waves that can interfere with deep sleep. Benzodiazepines also can relieve the symptoms of restless legs syndrome, which is common among people with fibromyalgia. Restless legs syndrome is characterized by unpleasant sensations in the legs as well as twitching, particularly at night. Because of the potential for addiction, doctors usually prescribe benzodiazepines only for people who have not responded to other therapies. Benzodiazepines include clonazepam (Klonopin) and diazepam (Valium).

Other medications

In addition to the previously described general categories of drugs, doctors may prescribe others, depending on a person's specific symptoms or fibromyalgia-related conditions. For example, in recent years, two medications –

tegaserod (Zelnorm) and alosetron (Lotronex) – have been approved by the FDA for the treatment of irritable bowel syndrome. Gabapentin (Neurontin) currently is being studied as a treatment for fibromyalgia. (See *What Are Researchers Learning About Fibromyalgia?* page 19.) Other symptom-specific medications include sleep medications, muscle relaxants, and headache remedies.

People with fibromyalgia also may benefit from a combination of physical and occupational therapy, from learning pain-management and coping techniques, and from properly balancing rest and activity.

Complementary and alternative therapies

Many people with fibromyalgia also report varying degrees of success with complementary and alternative therapies, including massage, movement therapies (such as Pilates and the Feldenkrais method), chiropractic treatments, acupuncture, and various herbs and dietary supplements for different fibromyalgia symptoms. (For more information on complementary and alternative therapies, contact the National Center for Complementary and Alternative Medicine. See *Where Can I Get More Information About Fibromyalgia?* page 21.)

Though some of these supplements are being studied for fibromyalgia, there is little, if any, scientific proof yet that they help. The FDA does not regulate the sale of dietary supplements, so information about side effects, the proper

dosage, and the amount of a preparation's active ingredient may not be well known. If you are using or would like to try a complementary or alternative therapy, you should first speak with your doctor, who may know more about the therapy's effectiveness, as well as whether it is safe to try in combination with your medications.

Will Fibromyalgia Get Better With Time?

Fibromyalgia is a chronic condition, meaning it lasts a long time – possibly a lifetime. However, it may comfort you to know that fibromyalgia is not a progressive disease. It is never fatal, and it won't cause damage to your joints, muscles, or internal organs. In many people, the condition does improve over time.

What Can I Do To Try To Feel Better?

Besides taking medicine prescribed by your doctor, there are many things you can do to minimize the impact of fibromyalgia on your life. These include:

- **Getting enough sleep** – Getting enough sleep and the right kind of sleep can help ease the pain and fatigue of fibromyalgia. (See *Tips for Good Sleep*, page 14.) Even so, many people with fibromyalgia have problems such as pain, restless legs syndrome, or brain-wave irregularities that interfere with restful sleep.

- **Exercising** – Though pain and fatigue may make exercise and daily activities difficult, it's crucial to be as physically active as possible. Research has repeatedly shown that regular exercise is one of the most effective treatments for fibromyalgia. People who have too much pain or fatigue to do vigorous exercise should begin with walking or other gentle exercise and build their endurance and intensity slowly. Although research has focused largely on the benefits of aerobic and flexibility exercises, a new NIAMS-supported study is examining the effects of adding strength training to the traditionally prescribed aerobic and flexibility exercises.

- **Making changes at work** – Most people with fibromyalgia continue to work, but they may have to make big changes to do so; for example, some people cut down the number of hours they work, switch to a less demanding job, or adapt a current job. If you face obstacles at work, such as an uncomfortable desk chair that leaves your back aching or difficulty lifting heavy boxes or files, your employer may make adaptations that will enable you to keep your job. An occupational therapist can help you design a more comfortable workstation or find more efficient and less painful ways to lift.

  If you are unable to work at all due to a medical condition, you may qualify for disability benefits through your employer or the Federal Government.

Tips for Good Sleep

- Keep regular sleep habits. Try to get to bed at the same time and get up at the same time every day – even on weekends and vacations.
- Avoid caffeine and alcohol in the late afternoon and evening. If consumed too close to bedtime, the caffeine in coffee, soft drinks, chocolate, and some medications can keep you from sleeping or sleeping soundly. Even though it can make you feel sleepy, drinking alcohol around bedtime also can disturb sleep.
- Time your exercise. Regular daytime exercise can improve nighttime sleep. But avoid exercising within 3 hours of bedtime, which actually can be stimulating, keeping you awake.
- Avoid daytime naps. Sleeping in the afternoon can interfere with nighttime sleep. If you feel you can't get by without a nap, set an alarm for 1 hour. When it goes off, get up and start moving.
- Reserve your bed for sleeping. Watching the late news, reading a suspense novel, or working on your laptop in bed can stimulate you, making it hard to sleep.
- Keep your bedroom dark, quiet, and cool.
- Avoid liquids and spicy meals before bed. Heartburn and late-night trips to the bathroom are not conducive to good sleep.
- Wind down before bed. Avoid working right up to bedtime. Do relaxing activities, such as listening to soft music or taking a warm bath, that get you ready to sleep. (An added benefit of the warm bath: It may soothe aching muscles.)

Social Security Disability Insurance (SSDI) and Supplemental Security Insurance (SSI) are the largest Federal programs providing financial assistance to people with disabilities. Though the medical requirements for eligibility are the same under the two programs, the way they are funded is different. SSDI is paid by Social Security taxes, and those who qualify for assistance receive benefits based on how much an employee has paid into the system; SSI is funded by general tax revenues, and those who qualify receive payments based on financial need. For information about the SSDI and SSI programs, contact the Social Security Administration. (See *Where Can I Get More Information About Fibromyalgia?* page 21.)

- **Eating well** – Although some people with fibromyalgia report feeling better when they eat or avoid certain foods, no specific diet has been proven to influence fibromyalgia. Of course, it is important to have a healthy, balanced diet. Not only will proper nutrition give you more energy and make you generally feel better, it will also help you avoid other health problems.

What Are Researchers Learning About Fibromyalgia?

The NIAMS sponsors research that will improve scientists' understanding of the specific problems that cause or

accompany fibromyalgia, in turn helping them develop better ways to diagnose, treat, and prevent this syndrome.

The research on fibromyalgia supported by NIAMS covers a broad spectrum, ranging from basic laboratory research to studies of medications and interventions designed to encourage behaviors that reduce pain and change behaviors that worsen or perpetuate pain.

Following are descriptions of some of the promising research now being conducted:

- **Understanding pain** – Because research suggests that fibromyalgia is caused by a problem in how the body processes pain – or more precisely, a hypersensitivity to stimuli that normally are not painful – several NIAMS-supported researchers are focusing on ways the body processes pain to better understand why people with fibromyalgia have increased pain sensitivity.

  Previous research has shown that people with fibromyalgia have reduced blood flow to parts of the brain that normally help the body deal with pain. In one new NIAMS-funded study, researchers will be using imaging technology called positron emission tomography (PET) to compare blood flow in the brains of women who have have fibromyalgia with those who do not. In both groups, researchers will study changes in blood flow that occur in response to painful stimuli.

Researchers speculate that female reproductive hormones may be involved in the increased sensitivity to pain characteristic of fibromyalgia. New research will examine the role of sex hormones in pain sensitivity, in reaction to stress, and in symptom perception at various points in the menstrual cycles of women with fibromyalgia and of women without it. The results from studying these groups of women will be compared with results from studies of the same factors in men without fibromyalgia over an equivalent period of time.

Another line of NIAMS-funded research involves developing a rodent model of fibromyalgia pain. Rodent models, which use mice or rats that researchers cause to develop symptoms similar to fibromyalgia in humans, could provide the basis for future research into this complex condition.

- **Understanding stress** – Medical evidence suggests that a problem or problems in the way the body responds to physical and/or emotional stress may trigger or worsen the symptoms of any illness, including fibromyalgia. Researchers funded by NIAMS are trying to uncover and understand these problems by examining chemical interactions between the nervous system and the endocrine (hormonal) system. Scientists know that people whose bodies make inadequate amounts of the hormone cortisol experience many of the same symptoms as people with fibromyalgia, so they also are

exploring if there is a link between the regulation of the adrenal glands, which produce cortisol, and fibromyalgia.

Another NIAMS-funded study suggests that exercise improves the body's response to stress by enhancing the function of the pituitary and adrenal glands. The hormones produced by these two endocrine glands are essential to regulating sleep and emotions, as well as processing pain.

- **Improving sleep** – Researchers supported by NIAMS are investigating ways to improve sleep for people with fibromyalgia whose sleep problems persist despite treatment with medications. One team has observed that fibromyalgia patients with persistent sleep problems share characteristics with people who have insomnia, such as having erratic sleep and wake schedules and spending too much time in bed. This team is testing whether strategies developed to help insomnia patients will also help people with fibromyalgia achieve deep sleep, which eases pain and fatigue. Preliminary results show that sleep education, which teaches good sleep habits, and cognitive behavioral therapy, which includes sleep education and a regimen to correct poor habits and improper sleep schedules, both reduce insomnia.

- **Looking for the family connection** – Because fibromyalgia appears to run in families, one group of NIAMS-supported researchers is working to identify

whether a gene or genes predispose people to the condition.

Another team is trying to determine if fibromyalgia is more common in people with other conditions, such as serious mood disorders, that tend to run in families. Specifically, the group is studying the prevalence of psychiatric disorders and arthritis and related disorders in people with fibromyalgia and their first-degree relatives (parents, children, sisters, brothers) as compared to people with rheumatoid arthritis and their relatives. The group is exploring whether clusters of conditions exist in families, which might shed light on shared common risk factors or disease processes.

- **Studying and targeting treatments** – NIAMS recently funded its first study of a drug treatment for fibromyalgia. The study will measure the effectiveness of gabapentin, an anticonvulsant medication, in reducing symptoms of fibromyalgia. Gabapentin has been found to relieve chronic pain caused by nervous system disorders, and it was recently approved by the FDA for the treatment of persistent, severe pain that can follow an episode of shingles.

  Scientists recognize that people with fibromyalgia often fall into distinct subgroups that adapt to and cope with their symptoms differently. They also realize that these subgroups may respond to treatments differently. One NIAMS-funded team of researchers

has divided people with fibromyalgia into three groups based on how they cope with the condition. Relative to other chronic pain patients, those in the first group have higher levels of pain and report more interference in their life due to pain. They also have higher levels of emotional distress, and feel less control over their lives and are less active. The second group reports receiving less support from others, higher levels of negative responses from significant others, and lower levels of supportive responses from significant others. Those in the third group are considered adaptive copers; they have less pain, report less interference in their lives due to pain, and have less emotional distress. Members of this last group feel more control over their lives and are more active. On the premise that the better you understand the subgroups, the better you can tailor treatments to fit them, the researchers now are trying to design and test different programs for each group, combining physical therapy, interpersonal skills training, and supportive counseling.

Where Can I Get More Information About Fibromyalgia?

- **National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)**
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  1 AMS Circle
  Bethesda, MD 20892–3675
  Phone: 877–22–NIAMS (226-4267) (free of charge)
  TTY: 301–565–2966
  Fax: 301–718–6366
  E-mail: NIAMSInfo@mail.nih.gov
  www.niams.nih.gov

- **National Center for Complementary and Alternative Medicine**
  National Institutes of Health
  P.O. Box 7923
  Gaithersburg, MD 20898–7923
  Phone: 888–644–6226 (free of charge)
  TTY: 866–464–3615 (free of charge)
  Fax: 866–464–3616 (free of charge)
  E-mail: info@nccam.nih.gov
  www.nccam.nih.gov

- **Social Security Administration**
  Office of Public Inquiries
  Windsor Park Building
  6401 Security Boulevard
  Baltimore, MD 21235
  Phone: 800–772–1213 (free of charge)
  TTY: 800-325-0778 (free of charge)
  www.ssa.gov/disability

- **American College of Rheumatology/Association of Rheumatology Health Professionals**
  1800 Century Place, Suite 250
  Atlanta, GA 30345–4300
  Phone: 404–633–3777
  Fax: 404–633–1870
  www.rheumatology.org

- **Advocates for Fibromyalgia Funding, Treatment, Education, and Research**
  P.O. Box 768
  Libertyville, IL 60048–0766
  Phone: 847–362–7807
  Fax: 847–680–3922
  E-mail: info@affter.org
  www.affter.org

- **Fibromyalgia Network**
  P.O. Box 31750
  Tucson, AZ 85751–1750
  Phone: 800–853–2929 (free of charge)
  www.fmnetnews.com

- **National Fibromyalgia Association**
  2200 N. Glassell Street, Suite "A"
  Orange, CA 92865
  Phone: 714–921–0150
  www.fmaware.org

- **National Fibromyalgia Partnership**
  P.O. Box 160
  Linden, VA 22642–0160
  Phone: 866–725–4404 (free of charge)
  Fax: 866–666–2727 (free of charge)
  E-mail: mail@fmpartnership.org
  www.fmpartnership.org

- **Arthritis Foundation**
  1330 West Peachtree Street
  Atlanta, GA 30309
  Phone: 404–872–7100 or
  800–283–7800 (free of charge) or call your local chapter
  (To find your local chapter, check your phone directory or visit the foundation's Web site.)
  www.arthritis.org

Key Words

Adrenal glands – A pair of endocrine glands located on the surface of the kidneys. The adrenal glands produce corticosteroid hormones such as cortisol, aldosterone, and the reproductive hormones.

Arthritis – Literally means joint inflammation, but is often used to indicate a group of more than 100 rheumatic diseases. These diseases affect not only the joints but also other connective tissues of the body, including important supporting structures, such as muscles, tendons, and ligaments, as well as the protective covering of internal organs.

Analgesic – A medication or treatment that relieves pain.

Connective tissue – The supporting framework of the body and its internal organs.

Chronic disease – An illness that lasts for a long time, often a lifetime.

Cortisol – A hormone produced by the adrenal cortex, important for normal carbohydrate metabolism and for a healthy response to stress.

Fibrous capsule – A tough wrapping of tendons and ligaments that surrounds the joint.

Fibromyalgia – A chronic syndrome that causes pain and stiffness throughout the connective tissues that support and move the bones and joints. Pain and localized tender points occur in the muscles, particularly those that support the neck, spine, shoulders, and hip. The disorder includes widespread pain, fatigue, and sleep disturbances.

Inflammation – A characteristic reaction of tissues to injury or disease. It is marked by four signs: swelling, redness, heat, and pain. Inflammation is not a symptom of fibromyalgia.

Joint – A junction where two bones meet. Most joints are composed of cartilage, joint space, fibrous capsule, synovium, and ligaments.

Ligaments – Bands of cordlike tissue that connect bone to bone.

Muscle – A structure composed of bundles of specialized cells that, when stimulated by nerve impulses, contract and produce movement.

Nonsteroidal anti-inflammatory drugs (NSAIDs) – A group of drugs, such as aspirin and aspirin-like drugs, used to reduce inflammation that causes joint pain, stiffness, and swelling.

Pituitary gland – A pea-sized gland attached beneath the hypothalamus at the base of the skull that secretes many hormones essential to bodily functioning. The secretion of

pituitary hormones is regulated by chemicals produced in the hypothalamus.

Sleep disorder – A disorder in which a person has difficulty achieving restful, restorative sleep. In addition to other symptoms, people with fibromyalgia usually have a sleep disorder.

Tender points – Specific places on the body where a person with fibromyalgia feels pain in response to slight pressure.

Tendons – Fibrous cords that connect muscle to bone.

Acknowledgments

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