

Advancing WOMEN'S HEALTH

Center for the Advancement of Women's Health newsletter

PAIN Why does it hurt and what can you do about it?

Of all the health symptoms we dread, pain tops the list. Pain isn't easy to ignore. It interferes with activities that we need or want to do. It's unpleasant, makes you tired, depressed, and anxious, and disrupts your sleep. Pain is a little bit easier to deal with if you think it will get better, or if you know you have control over it. But if pain drags on and on, or if it feels like there is nothing you can do about it, it can totally dominate your life. Let's learn a little about pain and what you can do to control it.

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Pain: Why does it hurt and what can you do about it?

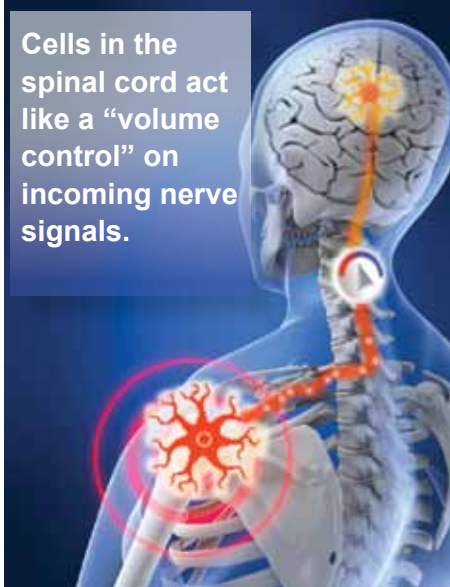
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How does pain work?

In normal situations, pain is triggered by nerve endings in the skin, musculoskeletal structures (muscles, ligaments, tendons, joints, bones) or internal organs. These nerve endings are activated by substances released when tissues are damaged or inflamed. The nerves send signals to nerve cells in the spinal cord, which act like a “volume control” on incoming nerve signals. The volume can be turned up or down depending on many different factors. The set point for volume is affected by genetics or family history of pain and by how often or for how long a person experiences pain over a lifetime.

The spinal cord nerve cells relay incoming signals up to several parts of the brain. One area of the brain where pain signals end tells you where it hurts and how much. Another part, the emotional brain, controls how unpleasant or upset you are over the pain. Finally there is the rational part of your brain that controls how you think about or evaluate your pain. This part of the pain pathway is influenced by how much you think you can control the pain and your rational understanding of it. These brain areas connect to one another so that the emotional brain can actually increase the intensity of the pain or your rational brain can make it feel better. Your brain can also send signals back down the spinal cord to change the “volume” of incoming pain signals.

Did you ever wonder why pain is more noticeable when you aren't occupied with doing something or thinking about something else? Said another way, the more you focus on the pain, the worse it feels. Have you even noticed that you can walk off or shake off injury by continuing to move? Have you ever noticed that more



Cells in the spinal cord act like a “volume control” on incoming nerve signals.

pain in one body area can make another painful body area seem to hurt less? Did you know that the feeling that you can control your pain reduces the level of the pain? All these phenomena are related to how pain signals in the spinal cord and brain are integrated.


Acute pain

Most of us are familiar with pain that comes on following an injury, during an illness or after surgery. A cut on your skin has pain that feels sharply intense can be precisely localized. Deeper, duller pain such as a muscle strain or arthritis of your knee is a little harder to pinpoint and is clearly related to movement of the affected area. In this type of pain, the intensity of movement is strongly correlated with the degree of pain it induces. Walking on a sprained ankle may hurt a little, but running

and jumping hurts more. Even the pain of a stomach ulcer or reflux is felt in the same place every time and is predictably related to eating or certain foods. Some injuries involve skin as well as deeper tissues. The associated pain gets better with healing, which takes a variable amount of time depending on what tissue is injured and how severe or extensive the damage. Healing may also depend on changes in behavior. If you have an injury related to a specific type of activity, continuing that activity may significantly delay healing. For example, a runner with shin splints needs to stop or reduce that activity so that healing can occur. There are also some types of pains that are associated with damage that does not reverse. Some types of arthritis are associated with damage to cartilage, which is a tissue that does not heal back to normal. In that situation, ways to control the pain are needed.

Acute pain comes and goes away in a relatively short time, is driven by the nerves in damaged tissues, and can usually be treated by simple physical measures like heat or cold and over-the-counter medications like acetaminophen/Tylenol, ibuprofen/Motrin, naproxen/Aleve, and many others. Severe acute pain, such as

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Letter from the director



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Director, Center for the
Advancement of Women's Health

This newsletter focuses on an issue that is near to my heart. I interact with patients suffering from chronic pain on a daily basis, and we struggle together to reduce the impact of that pain on their quality of life. We are most successful when the chronic pain, while still present, can be put in a box that can at times be put away and often can be closed to prevent it from spilling out into all aspects of life. The box is created by understanding the nature of pain, feeling as though there are some strategies that can help control pain, and having a sense of purpose and worth despite the pain. The lid of the box is created from interests, activities and social interactions that can lessen the focus on pain.

It is critically important for those who suffer from chronic pain or for those of us who have a family member or friend who has chronic pain to work together on closing that pain box using some of the strategies we suggest.

I also want to make sure to keep focus on prevention strategies for chronic pain. In these times that seem so busy and where time seems to slip away so readily, it is essential to take the time we need to work on physical and mental health. Maintaining physical health includes regular exercise, a good sleep routine and a healthy diet. Working to maintaining ties with friends and taking time for outside interests is vital for mental health.

As exemplified by the study on cigarette smoking and chronic pain, we have used information from the Kentucky Women's Health Registry to try to understand health problems and suggest possible strategies to improve health. I was very surprised by the strength of the association between heavy smoking and chronic pain. However, I was also very excited by the finding that suggests quitting smoking may reduce chronic pain. This is a very important observation that could potentially help the many Kentucky women who suffer from chronic pain. I want to thank my colleague Dr. David Mannino and his student Michael Mitchell, who worked to complete this project.

We are very pleased to have many students and faculty at the University of Kentucky who have been inspired to ask important questions about Kentucky's women using the information so generously provided by participants in the registry. Together, we can continue to find ways to improve our health and quality of life.

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SPRING/SUMMER HEALTH AWARENES DAYS

- May is American Stroke Month**
- May 8-14 is National Women's Health Week**
- May 12 is Fibromyalgia Awareness Day**
- May 31 is World No-Tobacco Day**
- September is Ovarian Cancer Awareness Month**

If you want more information on these observances, view them online at www.cdc.gov/women/observances/index.htm.

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post-operative pain, can be treated with a short course of stronger pain medications that contain opioids (codeine, hydrocodone, oxycodone, morphine and others). One must be smart about physical activities, though complete rest is rarely needed and probably does more harm than good.

Chronic pain

If acute pain doesn't last more than two or three months, it is unlikely that the pain pathways in the spinal cord and brain will be affected. But as pain drags on and transitions to chronic pain, the nerve cells in the spinal cord change. Accompanying this change, pain can begin to spread, can start to move from place to place seemingly for no reason, and can be more difficult to precisely localize. Tightness in muscles triggered by spinal cord reflexes can start to be a significant source of pain rather than just a reaction to pain. Accompanying the changes in the spinal cord that affect the character of the pain, changes in the brain can increase fatigue, depression, anxiety and problems thinking. These changes are often accompanied by reduced physical activity and worsening sleep, both of which contribute to the vicious cycle of pain. In some people, damaged tissues still contribute to the overall pain. In others, even if the acute pain heals, the changes in the spinal cord and brain can continue to drive pain. This increased pain from the spinal cord and brain is called central pain amplification.

Treating chronic pain is vastly more difficult than treating acute pain. While the types of treatments that help acute pain may be useful, particularly if tissue damage is still present, these medications typically do not completely eliminate pain. Even more troublesome, chronic use of opioid medications can actually increase the

chance of central pain amplification by activating cells in the spinal cord that "turn up the volume" on pain nerves. One should be suspicious that this may be happening if the pain seems to increase in intensity, spread to more areas of the body, or become more difficult to locate with continued use or higher doses of opioid-containing medications.

There are other types of medications that help some patients with chronic pain. Medications such as gabapentin/Neurontin or pregabalin/Lyrica reduce the over-activity of spine neurons. Antidepressant-type medications such as amitriptyline/Elavil, duloxetine/Cymbalta, milnacipren/Savella, and many other antidepressants affect chemicals called serotonin and norepinephrine. The chemicals come from the brain down to the spinal cord and "turn down the volume" on pain. Don't be confused by the fact that these medications also work for depression.

They have an important effect on pain pathways in the spinal cord and brain that is independent of any antidepressant effect, which is why they are used for chronic pain. Unfortunately, none of the available medications works for everyone with chronic pain, and they often have side effects that may not be tolerated.

Since medicines will rarely completely control chronic pain, are there other strategies that can help? One of the biggest problems with chronic pain is that it reduces the level of physical activity which paradoxically makes chronic pain harder to manage. Exercise, particularly aerobic exercise and exercises such as Tai-Chi and yoga, is the best long-term strategy for resetting the "volume" on pain toward normal. Those with chronic pain need to find a smart way to increase physical activity and they need to be consistent (See below). Exercise is also the best way to

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Benefits of exercise

- Aerobic exercise is any type of activity that will increase heart rate and includes activities like walking, running, cycling, swimming and stair climbing.
- Use your pulse rate to tell if you are getting aerobic exercise. The target pulse varies according to age. Maximal heart rate is calculated by subtracting your age from the number 220. Your target heart rate when you start an exercise program is half your age-adjusted maximal heart rate.
- Cross-training is varying the types of aerobic activities, which reduces risk of repetitive injury. We recommend cross-training rather than doing the same activity every time.
- For every exercise period, we recommend five minutes of warmup to reduce possibility of injury and five minutes of cool down with gentle stretching to lengthen the muscles.
- When getting started, do only the amount of aerobic activity that you are SURE you can do without injury, even if this is only five or 10 minutes.
- Be consistent with your exercise program, starting with every other day. On a bad day, reduce the time or intensity of exercise, but try not to skip exercise sessions.
- Increase the time of aerobic activity by two minutes every two weeks until you get up to your target of 30 minutes at least every other day.

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combat the fatigue associated with pain. Most chronic pain patients try to do too much too soon when starting or returning to physical activity, so it is important to start slowly. Physical therapists can be an important aid in getting started with an exercise program.

Since how you think about pain strongly influences levels of pain, counseling can also be an important way to gain control over pain and increase coping skills. A type of counseling called cognitive behavior therapy is particularly useful for those with chronic pain.

Preventing chronic pain

There are some things that we cannot control. We can't choose our family, and genes strongly influence pain. We also can't control many injuries or diseases that happen to us that can cause pain. There are some things, however, that we can control that may help prevent central pain amplification. The first is to maintain physical activity and minimize inactivity. We recommend an average of 30-60 minutes of physical activity daily, but anything is better than nothing. If an acute painful event occurs, allow healing but get back to moving as soon as possible.

Getting enough sleep and maintaining a normal sleep-wake rhythm is also



Over time, a routine for sleeping and waking is better than using medications for sleep.

important. The most efficient sleep is associated with going to bed and getting up at the same time every day. Good health in most people means getting eight hours of sleep. However, it is important to remember that it is normal for most people to have nights (which can be most nights as you get older) where it is difficult to fall asleep or you wake up during the night. Developing and sticking to a routine for bedtime and waking is the most important aspect of healthy sleep and over time will be better than using medicines for sleep.

A healthy diet that includes colorful fruits and vegetables, whole grains, lean meats, and fish can help prevent injury. Foods rich in omega-3 fatty acids,

including fish, can reduce inflammation associated with pain.

Cigarette smoking is strongly associated with chronic pain. A recent study from the Center for the Advancement of Women's Health showed that pain increased with higher levels of smoking and that pain was less likely in those that quit smoking (See article on page 8). Smoking is also associated with disrupted sleep since nicotine is highly addictive and cravings typically occur about two hours after the last dose. We also suggest limiting use of opioid-containing medications to treat acute pain, using these medications for the shortest possible time after an injury or surgery.

Lastly, maintaining healthy social relationships and activities that you value can reduce the risk for chronic pain. Friends, family, colleagues and pets can all work to reduce stress and isolation that make chronic pain more likely. Maintaining interests and activities that are engaging and pleasurable can also reduce the risk for developing chronic pain and reduce the impact of chronic pain.

Reduce the risk for chronic pain by maintaining healthy social relationships and activities that you value.

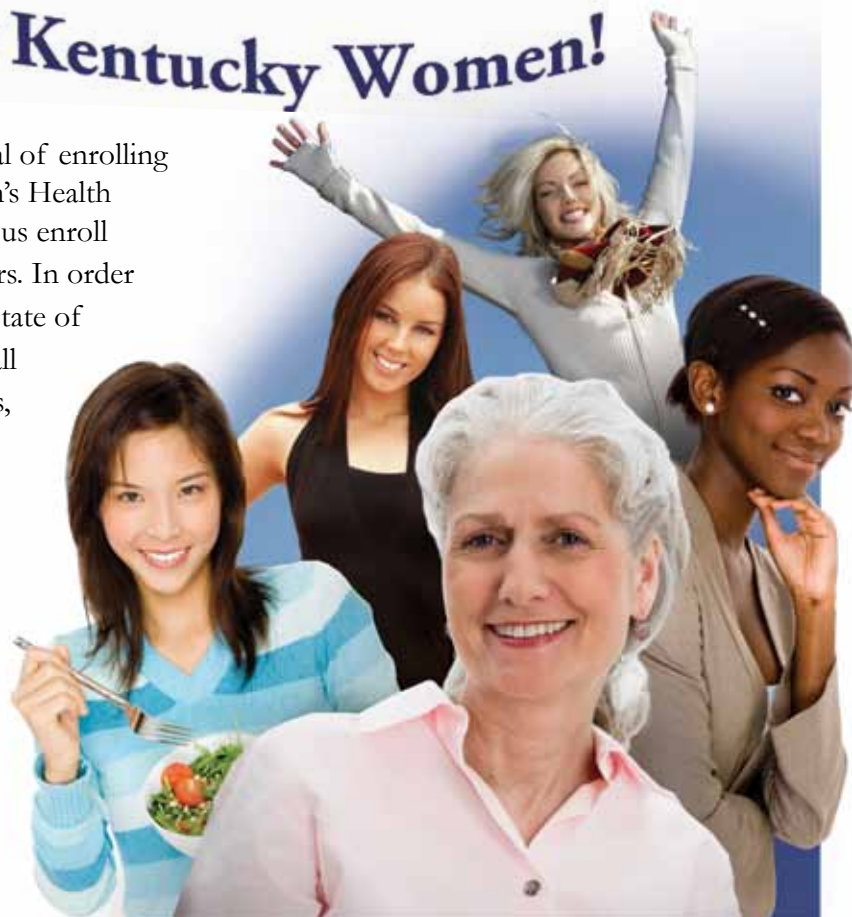


Help us reach more Kentucky Women!

The CHALLENGE: In order to achieve our goal of enrolling 2,500 women each year into the Kentucky Women's Health Registry, we would like to ask each of you to help us enroll three or more of your friends, family or co-workers. In order for the registry to get an accurate account of the state of women's health in Kentucky, we need women of all ages, all states of health, smokers and nonsmokers, sick and well, young and old, from all across the Commonwealth to be a part of it. All you do is complete a 20-minute survey once a year.

Visit the website:
www.kywomensregistry.com
or call **1-800-929-2320**
for more information.

Don't forget to renew your own survey each year!



What the registry is telling us:

For this issue, I compared some responses of the 1,279 women who completed a survey in both 2006 and 2010.

EMPLOYMENT:

Looking at the women who worked only one job in 2006, 79 percent still work at only one job, 5 percent now work at more than one job, 2 percent are disabled, and 8 percent have retired.

SMOKING CESSATION:

Of those women who smoked in 2006, 38 percent have quit smoking.

INCREASED DIAGNOSES:

Differences between the years were a 5 percent increase in women reporting being diagnosed with either heart disease or cancer. Women had more trouble sleeping in 2010 than in 2006 by 5 percent as well.

ACTIVITY LEVELS:

Women's activity decreased between 2006 and 2010. The number of women who reported being very active remained the same – 18 percent, but the number of women who considered themselves sedentary was up from 15 percent to 20 percent.

CHRONIC PAIN:

In 2010 we added a question about over-the-counter and prescription pain meds to help women deal with their chronic pain. Of those who responded to this question: 64 percent sometimes used pain medications and 24 percent used pain medications either often or continuously.

MENTAL HEALTH ISSUES:

Finally, of the women who reported having any mental health issues in 2010, 41 percent received medication for their problem. In addition, 51 percent of women reported having counseling, medication, hospitalization or other treatment for depression in 2010.

Clinical Trials

Clinical research studies are scientific investigations in which people participate as volunteers to test drugs, devices or medical procedures. Controlled, scientific studies are necessary to help answer specific health questions and to develop safe and effective therapies. Please consider taking part in any clinical trial that relates to you.

Contribution of altered muscle hemodynamics to fatigability in women with and without fibromyalgia

Researchers at the University of Kentucky are examining how exercise may contribute to fatigue in some but not others, in a study titled: "Contribution of altered muscle hemodynamics to fatigability in women with and without fibromyalgia." You may be eligible for this research if you: are a woman between age 50 and 70; are diagnosed with fibromyalgia or have muscle weakness.

Subjects will be compensated for their time. For more information, please contact: **Douglas Long**, research coordinator by e-mail at delong@uky.edu or by phone at 859-323-5438.

TMD and Fibromyalgia Study

Got temporomandibular mandibular joint disorder (TMD)? Got fibromyalgia? Both? Neither? Want to participate in a project exploring the similarities of these conditions? If you answer "yes" to any of these questions, you may be interested in a research study that looks into the relationships between the symptoms of TMD and fibromyalgia. The project will also study the impact of stress and perceived stress on these medical conditions.

You may volunteer to participate in Dr. Leslie Crofford's study if you are female, age 18 to 65, diagnosed with TMD and/or fibromyalgia, or have neither of

these conditions. Please contact **Jenny Fuller**, clinical research coordinator, at 859-323-3805 for further information.

Gout Study

Researchers in the University of Kentucky Division of Rheumatology are conducting a research study to compare treatments with medications on participants who have gout along with a history of cardiovascular diseases, stroke or diabetes mellitus. You may be eligible for this research study if you are 55 and older; have diabetes mellitus or a history of heart disease or stroke; and have a history of acute arthritis with redness and swelling over one or more joints. Please contact **Jenny Fuller**, clinical research coordinator, at 859-323-3805 for further information.

For any of the above studies, you can also call UK Health Connection (toll free) at 1-800-333-8874 or call Mary Johnson at 859-323-1377 and toll free at 1-800-929-2320.

Studies at the UK Clinical Research Organization:

Research study on postpartum depression. Postpartum depression is a condition that affects 12-18 percent of all women who give birth in the United States. Social support has long been associated with the recovery process related to postpartum depression. To learn more, call: Research investigator Julia J. Hall, RN, at 859-323-6598.

Clinical trials website links:

Clinical trials at the University of Kentucky: ccts.uky.edu/Participants/opportunities.aspx

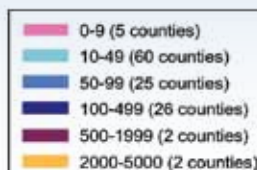
Clinical trials at the University of Louisville:

www.clinicaltrials.gov/ct/search?term=University+of+Louisville

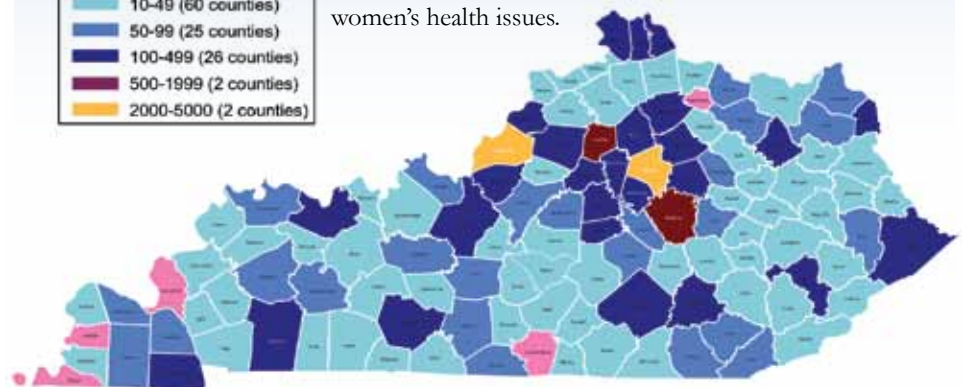
National listing of clinical trials: www.clinicaltrials.gov

How many women in your Kentucky county have registered for the registry?

Check out our interactive online map at www.kywomensregistry.com to learn more. Encourage your friends, family and neighbors to participate in the registry and increase the number of participants in your county!



Your action can help researchers find answers to women's health issues.

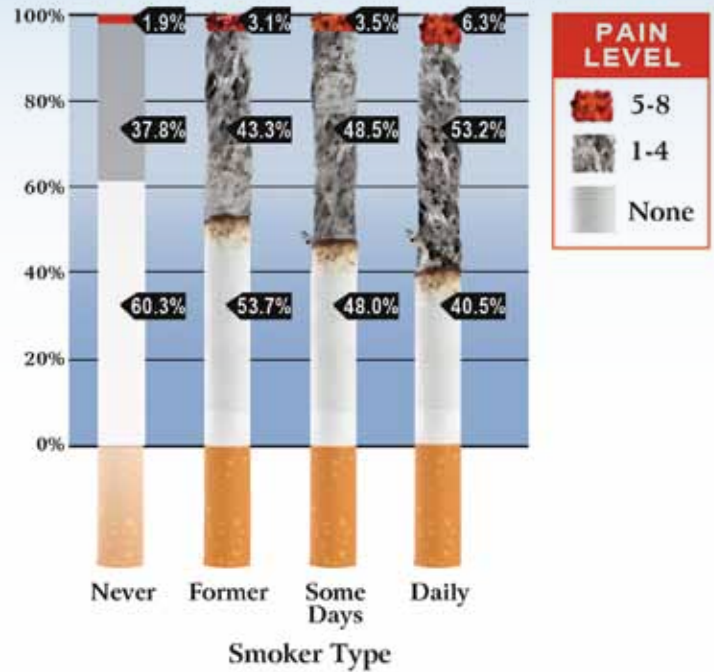


Smoking and Pain

We studied the relationship between cigarette smoking and chronic pain in more than 6,000 women participating in the Kentucky Women's Health Registry. We included women with fibromyalgia, pain all over the body, sciatica, or pain in the neck, back, joints, head. Even after adjusting for factors such as age, body weight, and county of residence, we found a strong association between smoking and chronic pain. Compared to never smokers, the risk of having chronic pain was increased by 70 percent in intermittent smokers, 200 percent in daily smokers, but only 20 percent in former smokers. This suggests that women with chronic pain may benefit from quitting smoking.

There was also a significant association between the number of cigarettes smoked every day and the risk of having more body areas of chronic pain, with more than 60 percent of women having pain in at least one body area and more than 6 percent having more than five types of chronic pain.

– Mitchell MD, Mannino DM, Steinke DT, Kryscio RJ, Bush HM, Crofford LJ. *Journal of Pain*. 2011



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