

CLINICIAN/FAMILY TOOL: OVERVIEW OF CHRONIC PAIN

1. Biopsychosocial Model of Pain: Most people understand pain as the body's physical response to injury. But a more complete understanding of pain includes a consideration of how thoughts, feelings, and other factors, like your genetics and environment, influence the pain experience. We refer to these biological, psychological, and social interactions as the biopsychosocial model. For example, if you are joking with a friend and they elbow you kiddingly, you are going to experience that physical response in your body differently than if they elbowed you in exactly the same manner but because they were mad at you. This difference in your perception of these two physical sensations is not the result of your body's physical response to the elbows but rather the interaction of biological (e.g., how tired you are), psychological (e.g., different emotional states), and social (e.g., interaction with others) factors that contribute to the different perception.

2. Acute/Chronic Signaling Nervous System Explanation: Every day the brain and body work together to send and receive signals through the nervous system that, when working correctly, keep you moving, safe, and functional. If you injure yourself or get sick, your body sends a "danger" signal to your brain. Your brain processes this "danger" signal as pain and sends a signal back to your body so your body can respond to protect you. This is called *acute pain* and is helpful as it keeps people safe. Think about how quickly you move your hand when you touch a hot stove.

But sometimes this process does not work correctly, and your brain and body continue to send and receive pain signals even after the danger has passed (e.g., the initial illness or injury has healed). This is called *chronic pain*, and is not helpful as the danger is gone but the signals are still being sent and the pain is still being felt (e.g., your broken leg is healed but every step you take is still painful). When the brain focuses on these faulty danger signals, it is difficult to pay attention to anything but the physical feeling of pain and it can be even more challenging to do the activities that you want and have to do.

3. Analogy of the Signaling Problem: What causes the brain and body to overreact in this way? Let's think about chronic pain as a faulty alarm system. Imagine that the pain signal is like the alarm system in your house. When working properly, your house alarm goes off when it recognizes danger (e.g., your house is being broken into). This alarm protects your house and is helpful as it is signaling true danger.

But sometimes the alarm system begins to work incorrectly and goes off when it perceives something to be dangerous when it is not (e.g., rain hitting the window). It is really hard to know when it is safe to ignore the alarm because every time you hear it you wonder if something serious might be wrong. Over time, the alarm system may become more sensitive to these false dangers and less and less is required to set off the alarm (e.g., the wind blowing against the house, a shadow).

The same thing happens in your brain and body with chronic pain. When working properly, the alarm only goes off when something dangerous is happening (e.g., touching a hot stove) – in your body, this is acute pain. However, if the system begins to work improperly, like in chronic pain, the alarm may begin to go off even when nothing dangerous is happening (e.g., experiencing pain even when not touching the hot stove).

If you inspect the alarm system, you will not find anything wrong with the alarm's hardware (e.g., the physical components of the alarm) but would find that these false alarms are due to a software problem (e.g., the communication system within the alarm) resulting in a faulty danger signal being sent. Similarly, when you experience chronic pain, the initial illness or injury has healed, however, the nervous system is still sending signals indicating that something is wrong.

4. Fixing the Signaling Problem by Focusing on Functioning and Emotions: The good news is there is a way to help the faulty alarm become more accurate and only go off when you are truly in danger. Learning to function through the faulty alarm signal *and* giving attention to your thoughts and feelings during the chronic pain episode can help to rewire those brain-body connections. Every time that you are able to do the opposite of what the faulty pain signal is telling you to do, you are helping your brain to differentiate between accurate and inaccurate danger signals. Additionally, it is likely (and understandable) that you have been focusing on your body responses above and beyond your thoughts and feelings during episodes of chronic pain. Developing your awareness of your thoughts and feelings and strengthening your ability to share them with others will help weaken the impact that pain has on your ability to function. We are not saying your body sensations, including pain, are not important or that you should just ignore them. What we are saying is that your thoughts and feelings are even *more* important and that we can best support you by focusing on this aspect of your experience to help you feel more empowered! Research in chronic pain shows us that the key is to strike a better balance between your body responses and your thoughts and feelings, like a seesaw. Let me show you some pictures to illustrate it.