



**. SPECIAL EDITION .**

## **FIGHTING TENNESSEE'S OPIOID ABUSE EPIDEMIC**



# TARGETED PAIN TREATMENT – REDUCE OPIOIDS, RECLAIM RELIEF



By Stephanie G. Vanterpool, MD, MBA

**M**arcy couldn't comb her hair. She was a 76-year-old grandma whose right shoulder pain had increased progressively over the last three years, to the point where she couldn't lift her arm to do almost anything above her shoulder. Lifting anything heavier than a glass of water caused excruciating shoulder pain. The pain was worse on the anterior right shoulder and extended down her arm to the mid-bicep.

She had tried acetaminophen, ibuprofen (which caused stomach upset), and was now taking hydrocodone 5/325 BID. Her orthopedic surgeon had done two right shoulder joint injections for her; the first one worked for two weeks, the second one didn't help at all. Physical therapy just made it to where she couldn't move her arm at all for two days afterward. Her shoulder x-ray showed "glenohumeral joint arthritis" ... and she couldn't comb her hair.

## TN CHRONIC PAIN DILEMMA

Marcy's shoulder pain presented a challenge that is all too common in healthcare today: How do we decrease opioid use, effectively treat pain, and increase function in our patients? This triad of goals is what I have termed the Tennessee Chronic Pain Dilemma. Although it is not unique to our state, we find ourselves at the forefront of the nationwide crisis surrounding opioids. In the middle of this crisis are our patients with pain, many of whom just want to be able to resume the activities they were able to do prior to developing pain. As their healthcare providers, it is our responsibility to help them achieve these goals, but also to first do no harm.

## TARGETED PAIN TREATMENT

Pain is a symptom of an underlying condition - and, as such, it is the underlying condition that should be targeted and treated. Too often, unclear targets or untargeted treatment attempts (opioids in particular) lead to inadequate relief, which leads to dose escalation and can ultimately lead to tolerance, dependence, and addiction. In short, a clear understanding of "cause" is often the missing link between the diagnosis and treatment of pain.

Targeted Pain Treatment (TPT) addresses that missing link. TPT is the process of accurately diagnosing the cause(s) of pain and then targeting the treatment to the cause(s).

As an anesthesiologist who specializes in Targeted Pain Treatment (TPT), I have spent my career trying to help my

patients with chronic pain reclaim relief and functional quality of life. By focusing on identifying the cause of pain as specifically as possible, then targeting the treatment to that cause, many patients can achieve their functional goals, often without the need for, or at least with reduced use of, opioids.

In this article, I will share some of the techniques and tools that I have found particularly useful in accurately diagnosing the cause or causes of each patient's pain, and then targeting the treatment to that cause. In addition to refreshing the reader on the different pain states and mechanisms that must be considered in any TPT model, we will review the keys to a pain-specific history (S.C.R.I.P.T), physical exam, and assessment. Finally, we will review a multimodal treatment algorithm (M.I.P.S.) that helps ensure that all components of the causes of pain and dysfunction are appropriately targeted.

## PAIN STATES & MECHANISMS

There are often multiple overlapping causes of pain in the same physical location on a patient. Identifying and understanding the unique combination of pain states and mechanisms that are present in your patient's pain complaint is a key component to accurately diagnosing the cause or causes of the pain.

In their 2016 article "Toward a Mechanism-Based Approach to Pain Diagnosis," Daniel Vardeh and colleagues gave an excellent overview of our current understanding of pain states and mechanisms<sup>1</sup>. In short, there are **four pain states** which may exist in isolation or in combination in a given patient presentation (*Table 1*): nociceptive pain, inflammatory pain, neuropathic pain, and centralized or dysfunctional pain.

Vardeh and colleagues also highlighted five pain mechanisms which when identified using clinical diagnostic criteria (*Table 2*), give insight into how the pain is being transmitted, and also to possible targeted treatment options. The five mechanisms identified are nociceptive transduction, peripheral sensitization, ectopic activity, central sensitization, and central disinhibition.

## THE PAIN FOCUSED HISTORY – S.C.R.I.P.T.

A thorough history coupled with an understanding of pain states and mechanisms will often reveal the most likely diagnoses even before the initial visit is complete. It is often necessary to have a framework in which to gather and process the history for best

**Table 1:** Accurate Diagnosis - Pain States\*

PAIN STATE	PATHOLOGY	SYMPTOMS
Nociceptive	Evidence of noxious (mechanical, thermal, chemical) insult	Pain localized to area of stimulus/ joint damage
Inflammatory	Evidence of inflammation (sterile or infectious)	Redness, warmth, swelling of affected area
Neuropathic	Evidence of sensory nerve damage	Burning, tingling or shock-like, spontaneous pain; paresthesias, dysesthesias
Dysfunctional/ centralized	Pain in the absence of detectable pathology	No identifiable noxious stimulus, inflammation or neural damage; evidence of increased amplification or reduced inhibition

\*Modified from Table 1. in Vardeh D, et.al. *J Pain.* 2016 Sep;17(9 Suppl):T50-69. doi: 10.1016/j.jpain.2016.03.001. Review.

**Table 2:** Accurate Diagnosis – Pain Mechanisms\*

GENERAL PAIN MECHANISM	CLINICAL DIAGNOSTIC CRITERIA	EXAMPLE
Nociceptive Transduction	Proportionate pain in response to identifiable noxious stimulus	Mechanical nerve root compression
Peripheral Sensitization	Primary hyperalgesia due to decreased transduction threshold of nociceptor terminal	Cellulitis pain
Ectopic activity	Spontaneous pain in the absence of obvious trigger, relieved by local nerve block	Trigeminal neuralgia
Central sensitization	Secondary hyperalgesia; temporal summation, allodynia	Complex Regional Pain Syndrome (CRPS)
Central disinhibition	Secondary hyperalgesia, allodynia	Fibromyalgia

\*\*Adapted from Table 2. in Vardeh D, et.al. *J Pain.* 2016 Sep;17(9 Suppl):T50-69. doi: 10.1016/j.jpain.2016.03.001. Review.

**Table 3:** Pain Assessment – History (S.C.R.I.P.T.)

S.C.R.I.P.T.	Information to Gather
<u>S</u> tory	- Circumstances of Onset (acute, trauma, insidious, etc) - Details, Details, Details
<u>C</u> urrent Symptoms	-Pain location -Pain description -ROM -Aggravating Factors -Alleviating factors
<u>R</u> x (Relevant Meds)	-Anti-inflammatories, Muscle relaxers, Nerve pain medication
<u>I</u> nterventions	-Previous injections to the area (what was injected, what type of injection was done?)
<u>P</u> hysical Therapy	-Previous PT, Massage, chiropractic, other
<u>T</u> ests	-Imaging of the affected area, NCS/EMG, etc (if done)

results. In my practice, I developed and utilize the **S.C.R.I.P.T.** history template (*Table 3*) – **S**tory, **C**urrent Symptoms, **R**x (Relevant Medications), **I**nterventions, **P**hysical Therapy, and **T**ests.

The story is often the single most illuminating component of the history. It is in this section that one gathers the details about the circumstances of onset, any unique body positions, activities, injuries or other precipitating factors. The story starts with clarification of the pain location - have the patient show you where his or her worst pain is located. Next, ask questions until you understand the mechanism of injury. My favorite question to ask is “Anything out of the ordinary happen prior to onset?” Ask for details until you can visualize - even reenact - the events surrounding the onset of the pain (MVC, fall, etc.).

Next, make sure you understand the current symptoms. What does the pain feel like? Identify aggravating and alleviating factors, or any associated symptoms or circumstance. This will often give clues to the pain states and mechanisms that are in play. For example, burning or tingling pain signifies neuropathic pain mechanisms, whereas aching or throbbing pain may signify nociceptive or inflammatory pain.

Then move on to understanding the Rx (Relevant Medications) that are currently used or have previously been tried. The efficacy of medications such as anti-inflammatories, muscle relaxers, neuromodulators can all help in identifying the target or cause of pain.

Any previous Interventions to address the pain should also be detailed, and the efficacy noted. For example, has the patient with shoulder pain already had a shoulder injection? If so, did it help, for how long? Just as important is noting when interventions have been tried but have not provided relief.

Previous physical therapy for the complaint should also

be documented, along with duration of therapy, efficacy, and whether there was functional or pain improvement.

Finally, review any available tests that have already been conducted to determine any anatomic or physiologic abnormalities that could be contributing to the patients presenting pain complaint.

## ACCURATE DIAGNOSIS – PUTTING IT ALL TOGETHER

Once you have gathered the S.C.R.I.P.T. history, the next step is the physical exam. The goal of the physical examination is to determine what functional limitations are most prominent. Essential components of the pain physical exam include observation of the patient (even before the “official” exam begins), making the patient move (assessing gait, range of motion, etc.), and touching the patient (locations of tenderness, muscle tightness, etc.).

At the completion of the evaluation you will have gathered three important components to elucidate the CAUSE or causes of the pain:

*From the History:* What pain states and mechanisms are present?

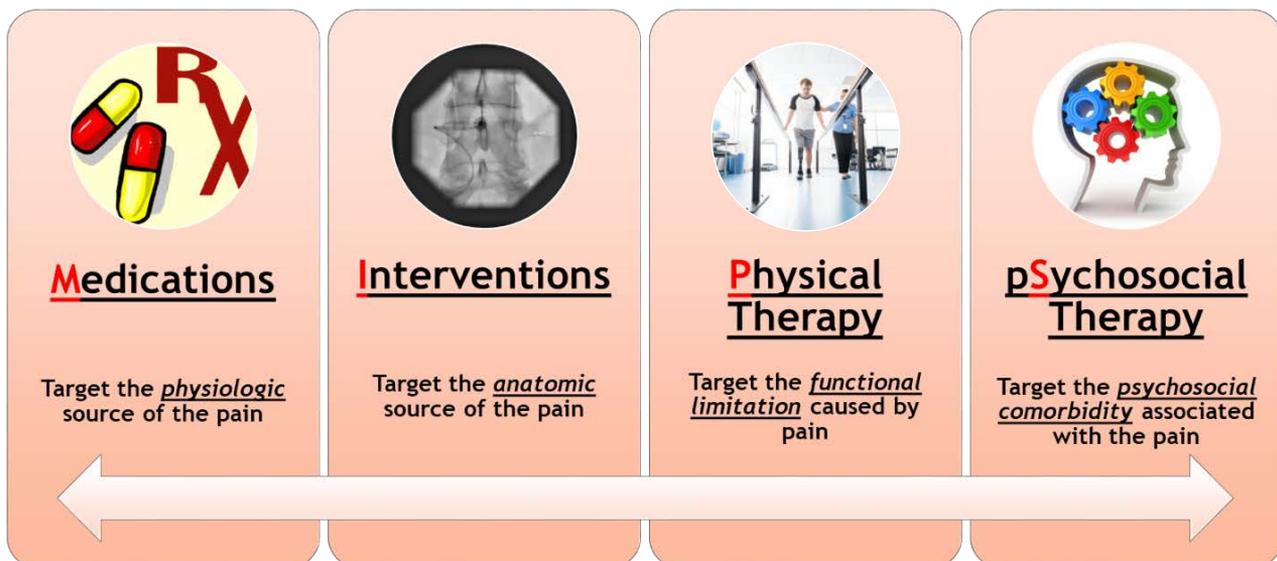
*From the Physical Exam:* What functional limitations are most prominent?

*From the Tests/Studies:* What anatomic or neurological pathology is the most likely cause?

Once the accurate cause of pain has been determined, you are now ready to move on to targeting the treatment for the pain.

(continued on page 13)

Figure 1: Target The Treatment – M.I.P.S.



## TARGET THE TREATMENT – M.I.P.S.

To obtain the most successful treatment outcomes, a multimodal approach should be employed<sup>3</sup>.

The acronym **M.I.P.S.**—**M**edications, **I**nterventions, **P**hysical Therapy, **P**sychosocial Therapy helps to ensure that all components of the pain and functional limitations are appropriately addressed (Figure 1).

**Medications** – Target the *physiologic source* of the pain – the pain states and mechanisms that have been identified. It is important to note that opioids do not target the physiologic cause of the pain. Therefore, they are not first line options pain treatment, and should almost never be used in isolation<sup>2</sup>. Instead, start with medications that target the identified pain states or mechanisms. \*\*In another article in this issue, Dr. David Edwards reviews the multiple types of targeted, non-opioid medications that can be used in treating the pain.\*\*

**Interventions** – Target the *anatomic source* of the pain. There are some interventions that can be performed safely and effectively without specialized equipment and training, while others are best performed by specialists. The key to any intervention or series of interventions for pain is that they should be specific, strategic and safe. Specific – meaning targeting the accurate source of the pain (e.g. greater trochanteric bursa vs intra articular hip injection for “hip” pain). Strategic – determine if you should treat the worst pain first, or if multiple sources of pain in the same physical location, do you need to instead start from the “inside” out. Safe – what anatomic, physiologic or pharmacologic factors in this patient are important to consider? What specialized equipment or training is recommended to perform the procedure safely?

**Physical Therapy** – Targets the *functional limitation* associated with the pain. It is important to note that in the chronic pain population, the first goal of physical therapy should not be to “fix” the problem, but rather to improve the patient’s function, focusing on small, achievable goals. Often, this is as simple as helping the patient focus on transition from sitting to standing or improve gait and balance. As pain is improved with the other treatment modalities (M.I.P.S), then the physical therapy can advance to further improvements in function.

**Psychosocial Therapy** – Targets the *psychological or psychosocial comorbidity* associated with the pain. While every patient may not need formal psychological services, it is very important to be keenly aware of the interplay between psychological or psychosocial comorbidities and pain perception and coping skills. When necessary, appropriately addressing this component of the patient’s diagnosis will often yield great results in improving function and in improving compliance with other treatments.

## TPT IN ACTION

Marcy’s shoulder pain was debilitating. From her S.C.R.I.P.T. history, I narrowed down the cause of her pain to the subacromial bursa on her anterior shoulder. This was confirmed on physical exam. This was primarily an inflammatory pain (pain state) with some nociceptive transduction and peripheral sensitization (pain mechanisms). The fact that the pain was coming from her bursa, not her shoulder joint, also explained why the second shoulder joint injection did not work.

Her M.I.P.S treatment plan consisted of adding topical diclofenac to the shoulder 4x/day to target the inflammation (M), performing a subacromial bursa injection in clinic to target the anatomic source of the pain (I), and then sending her to physical therapy to target the functional limitation and improve range of motion and strength in that shoulder and arm (P). Marcy had good insight and social support, so no formal psychological interventions were required.

Marcy left my office after her right subacromial bursa injection able to raise her arm above her head without pain. At her follow up six weeks later, she reported continued relief of her shoulder pain and improved strength and range of motion of that arm. She had completely stopped her hydrocodone and was now only using the diclofenac topical gel occasionally if she was very active. She was most happy about the fact that she could now...comb her hair.

TPT - the practice of accurately diagnosing the cause of the pain, then targeting treatment to the cause - enabled Marcy to eliminate the use of opioids and reclaim functional quality of life. By applying the TPT methodology to our patients with pain (eliciting a specific S.C.R.I.P.T. history, doing a thorough exam, and then employing an M.I.P.S. treatment plan), we can work together to address the Tennessee Chronic Pain Dilemma, reduce opioids, effectively treat pain and improve function for our patients. +

### REFERENCES:

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3. Roditi D, Robinson ME. The role of psychological interventions in the management of patients with chronic pain. *Psychology research and behavior management*. 2011;4:41-49. doi:10.2147/PRBM.S15375.