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inadvertent intra-arterial injection of local anesthetic would cause temporary lower extremity weakness that warns the physician of unintended needle tip position before injection of a particulate steroid that, if injected into this artery, could cause neurologic infarction. However, given the evidence for the safety of dexamethasone use in TFESI, the use of an anesthetic test dose is likely unnecessary. In fact, a test dose of local anesthetic could cause temporary motor block, which might increase the possibility of a fall postinjection, thus decreasing the overall safety of this procedure. If particulate steroid is injected, the potential benefit of the test dose may outweigh the risks associated with these side effects.

Myth #4: The use of digital subtraction imaging during lumbar TFESI correctly identifies intra-arterial uptake and allows prevention of neurological events in all cases.

Fact: The proper implementation and interpretation of digital subtraction imaging are operator dependent and do not inherently prevent an intra-arterial injection during lumbar transforaminal epidural steroid injection.

A case of spinal cord infarction with resulting paraplegia has been reported in association with a lumbar TFESI in which DSI was used. This case report illustrates that use of DSI does not guarantee safety, as the correct implementation and interpretation of DSI images depends

on operator skills and experience. The appropriate use of DSI includes the following steps:

1. Instruct the patient to hold their breath, not speak, and remain still during the several second DSI run.
2. Obtain a blank mask image (i.e., no observable bony projections).
3. Inject contrast and observe the flow pattern in a wide AP view.
4. Inject an adequate volume of contrast medium to provide confidence of epidural spread without concomitant fill of a radiculo-medullary artery or other blood vessels.

It must be acknowledged that there is insufficient published evidence to determine if intra-arterial injection can be ruled out by DSI in every case even when these technical factors are optimized by an operator who is also experienced in the interpretation of the images acquired. As such, it remains important to use dexamethasone as the firstline agent for lumbar TFESIs, even when live DSI is used.

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*An extended version of this FactFinder with complete references is available on the Spine Intervention Society Website at https://www.spineintervention.org/resource/resmgr/factfinder/FactFinder_2019_02_Minimizin.pdf.

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Letters to the Editor



LETTERS TO THE EDITOR

Project ECHO Chronic Pain: A Qualitative Analysis of Recommendations by Expert Faculty

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Dear Editor,

Project ECHO Chronic Pain is a telehealth intervention hosted by Weitzman Institute at Community Health Center, Inc. (CHCI), in Middletown, Connecticut, a large

federally qualified health center. Designed to help primary care providers (PCPs) treat patients with chronic pain, Project ECHO Chronic Pain uses a videoconference platform to offer a 10-month series of twice-monthly

Table 1. Count of 320 recommendations consistent with the CDC guidelines

Category/ Recommendation	Recommendation	Count
Category 1/A	Consider nonpharmacologic therapy and nonopioid pharmacologic therapy first or in combination with opioid therapy.	194
Category 1/B	Establish treatment goals with patients	18
Category 1/C	Discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities	30
Category 2	Opioid selection, dosage, duration, follow-up, and discontinuation	49
Category 3	Assessing risk and addressing harms of opioid use	29

two-hour interactive sessions. During each session, PCPs present two to four patient cases to a multidisciplinary faculty of experts from the Integrative Pain Center of Arizona in Tucson, who offer recommendations for pain management.

Our institutional review board–approved study asked if the expert faculty’s recommendations were consistent with the CDC Guidelines for Prescribing Opioids for Chronic Pain [1]. We randomly chose 25 of 67 cases presented during a 10-month series from April 2016 through November 2016; 179 PCPs from 82 practices in 14 states attended at least one session. Recommendations were transcribed, yielding 406 discrete units of data. Two researchers analyzed the data using the CDC guidelines as a priori coding categories for a text-driven deductive approach to content analysis [2,3]. The researchers discussed the assignment of data to the categories, in consultation with a third researcher, until there was mutual agreement on the content of the categories.

The content analysis found that 79% (320) of the 406 units of data could be assigned to specific CDC guidelines (Table 1). The remaining data addressed other issues, for example, how to assess the patient by tapping along a scar, imaging or other tests, comorbid conditions such as diabetes, and behavioral health. In Table 1, Category 1 of the guidelines—“Determining when to Initiate or Continue Opioids for Chronic Pain”—was broken down into three subcategories (A, B, C) for analysis. Categories 2 and 3—“Opioid Selection” and “Assessing Risk”—were not broken down further. Table 2 lists examples of quotes for each category.

Category 1/Subcategory A

This was the largest category, with 194 recommendations. Expert faculty recommended physical therapy (12); occupational therapy (7); behavioral health interventions, such as further evaluation, professional treatment, and community support groups (62); nonopioid medications such as nonsteroidal anti-inflammatory drugs and topical

Table 2. Examples of quotes from transcribed recommendations that align with the CDC guidelines

CDC Category	Explanation of CDC Guideline	Examples of Quotes from Transcribed Recommendations
Category 1/A	Consider nonpharmacologic therapy and nonopioid pharmacologic therapy first or in combination with opioid therapy.	<i>Get her into physical therapy and follow up after three visits to ask if it is working. Might be worth getting a family counseling session with a family therapist. Can use Lyrica to replace gabapentin if gabapentin doesn't work.</i>
Category 1/B	Establish treatment goals with patients.	<i>If she wants to keep taking tramadol, tie it to a functional goal like “I want to be able to specifically do this one thing I can't do without it.” Ask the patient to tell you his functional goals and work toward getting him some small successes.</i>
Category 1/C	Discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities.	<i>Explain to the patient about how the oxycodone is working as an anti-anxiety for her and that treating her anxiety with other things like Lexapro would be better. Tell him: I don't know enough about you to give you opioids and have it be safe for you.</i>
Category 2	Opioid selection, dosage, duration, follow-up, and discontinuation	<i>Once you get below the 100 micrograms of fentanyl [patch], you can go to 72 [mcg] every 48 [hours] or change the interval. When you get down to tiny doses, start to lengthen the interval. Get her off the oxycodone more quickly. You could do it over a month. The drop in the morphine is too fast for chronic pain. We send out any urine screens for the drug they are taking regardless of risk level.</i>
Category 3	Assessing risk and addressing harms of opioid use	<i>He's at really high risk for diverting some of this opioid. If you are concerned about suicidality, work down on number of tablets. Anxiety will probably go up as Percocets go down!</i>

applications (12), anticonvulsants (15), and antidepressants (25); complementary medicine (15); lifestyle changes, such as diet and exercise (34); and evaluation by a pain

clinic (9) and by a surgeon (3). These recommendations were intended to complement or replace treatment with opioids.

While working on the content analysis, the researchers found it was often difficult to separate the psychosocial issues from the more medical-specific recommendations. The researchers agreed that 159 (40%) recommendations included confounding psychosocial issues, most of which involved behavioral health and the social determinants of health. For example, 129 of the 159 recommendations addressed the patient's behavior, including engaging the patient in self-care, personal goals, and behavioral health treatment:

- *Tell him he can't get opiates unless he goes to behavioral health.*
- *Developmental history puts him at high risk of poor outcome for physical treatment [medications, physical therapy], so treat mental health first.*
- *Address his weight [less back pain if he loses weight].*

Another 27 recommendations related to assessment, management, and mitigation of risk were couched in psychosocial terms:

- *You can't continue prescribing opioids if her boyfriend keeps stealing them.*
- *Maybe switch to a long-acting alprazolam because of the [reduced risk of] overdose and worry about selling.*

Three recommendations addressed extrinsic issues:

- *It is legitimate for him to be on eight-hour dosing for OxyContin, but insurance won't cover eight-hour dosing, only 12-hour dosing.*

The expert faculty encouraged providers to address confounding psychosocial risk factors directly, as they can increase vulnerability to misuse of opioids and make engagement with a treatment plan more difficult 4,5. For example, a more thorough assessment of patients' developmental history and behavioral health might reveal unresolved emotional trauma, a family history of addiction, behavioral health disorders, and so on. Also, providers should better understand the patients' social determinants of health, such as living conditions, education and health literacy, access to community resources, etc.

Once risk factors are better understood, the patient must engage with the provider in a treatment plan built on a supportive relationship and mutual understanding of treatment goals. The approach recommended by the faculty can be described as "carrot and stick." On one hand, explaining how opioids are not effective in pain management, providing positive reinforcement for what patients are doing right, and encouraging them to better care for themselves help keep patients engaged. Providers might build a bridge to decreasing reliance on opioids by combining nonopioid medications with other treatments first. On the other hand, providers can make treatment with opioids contingent on a patient going to physical or

behavioral health therapy, or refuse to prescribe opioids at all.

The expert faculty strongly recommended that primary care providers build a network of professionals from other disciplines and community resources. It is not enough to refer a patient to physical therapy; the provider and physical therapist should agree on goals and communicate regularly about the patient's progress. The patient should experience treatment for chronic pain as a team effort, while being a member of a team eases the burden on the primary care provider to care for challenging and complex patients.

This study confirms that Project ECHO Chronic Pain expert faculty made recommendations that aligned with the CDC Guidelines for Prescribing Opioids [1]. Experts' recommendations for treatment augment primary care providers' familiarity with their own patients and community resources, improving care for patients struggling with chronic pain.

Conflicts of interest: The authors have no conflicts to disclose.

Authors' Contributions

The authors confirm that they have all had an active role in the research reported and in the preparation of the manuscript.

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