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# Telerehabilitation for Pain Management



Udai Nanda, DO<sup>a,b,\*</sup>, Jerry Luo, MD<sup>a,b</sup>, Quinn Wonders, PharmD, BCPS<sup>a,c</sup>, Sanjog Pangarkar, MD<sup>a,b</sup>

## KEYWORDS

- Telerehabilitation • Telehealth • Telemedicine • Chronic pain • Pain management
- Opioids • Whole health approach • Patient-centered care

## KEY POINTS

- Telerehabilitation for pain management decreases the burden of geographic, economic, and physical barriers for patients with chronic pain disorders.
- The successful implementation of telerehabilitation for pain should include a structured set-up, interview, and examination to reduce errors and variability in patient outcomes.
- The coronavirus disease-2019 public health emergency, along with changes to the Ryan Haight Act, and reimbursement schedule has increased access to telerehabilitation for pain management.
- A whole health approach to pain management engages patients in self-care, emphasizes partnerships in a team-based approach, and supports general health and well-being.

## INTRODUCTION

Timely access to medical care helps prevent and mitigate the impact chronic pain has on patients, their environment, and the health care system. In the United States, 20.4% of adults experience chronic pain and 7.4% experience high impact chronic pain, with women, non-Hispanic whites, and those older than 65 years most affected (**Fig. 1**).<sup>1</sup> These patients often require effective coordination of services between their medical providers to ensure communication and establish an interdisciplinary platform of care. Despite these efforts, barriers may still exist that make in-person medical care impractical, inconvenient, or unsafe. Such obstacles include the hardship of securing transportation for an appointment, which affects an estimated 3.6 million Americans

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<sup>a</sup> Department of Physical Medicine and Rehabilitation, VA Greater Los Angeles Healthcare System, 11301 Wilshire Boulevard (W117), Los Angeles, CA 90073, USA; <sup>b</sup> Division of Physical Medicine and Rehabilitation, Department of Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA; <sup>c</sup> Department of Pharmacy, VA Greater Los Angeles Healthcare System, Los Angeles, CA, USA

\* Corresponding author. Department of Physical Medicine and Rehabilitation, VA Greater Los Angeles Healthcare System, 11301 Wilshire Boulevard (W117), Los Angeles, CA 90073.

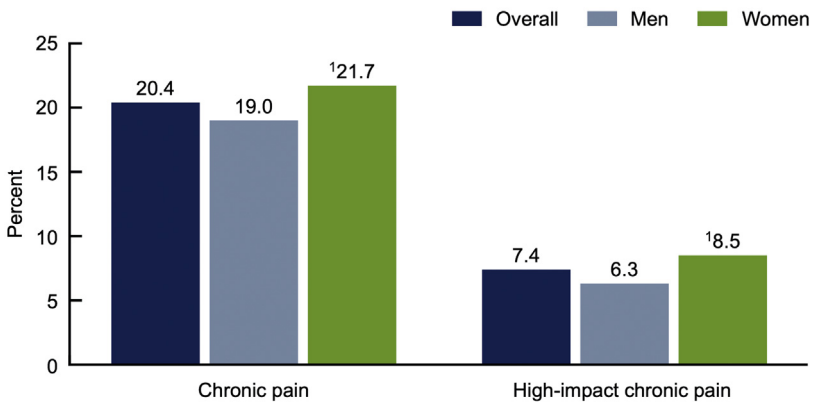
E-mail address: [udai.nanda@va.gov](mailto:udai.nanda@va.gov)

each year who cannot obtain medical care owing to a lack of transportation. These individuals demonstrate a higher prevalence of medical comorbidities, including pain-related disorders.<sup>2</sup> To ensure access to timely care, especially in circumstances such as the coronavirus disease-2019 pandemic, virtual visits may provide the safest avenue to medical services.

Telemedicine was formally identified in the 1970s but has played a role in medical care for more than 100 years.<sup>3</sup> The term literally means “healing at a distance” though more recently has been defined by the World Health Organization as:

*The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities.*<sup>4</sup>

Telemedicine uses many of the technologies already in use by the general population for routine communication, with modifications made for the purpose of health care delivery. Telerehabilitation for pain management provides a method for the prompt delivery of pain care to a vulnerable population when there is no alternative, or to improve on conventional approaches.<sup>5</sup> To develop the necessary skills, medical providers should review relevant evidence-based principles and practice a structured patient-centered approach. Regulations and guidance can vary during a given time period, with medical, legal, and financial implications. For example, paying close attention to the evolving telehealth guidelines for opioid prescribing and risk mitigation strategies can prevent serious health-related consequences, maintain compliance with governmental requirements, and ensure proper billing practices for medical encounters. This article outlines telerehabilitation strategies to deliver patient-centered care with a whole health approach to pain disorders.



**Fig. 1.** Percentage of adults aged 18 and over with chronic pain and high-impact chronic pain in the past 3 months, overall and by sex, United States, 2019. (From Centers for Disease Control and Prevention (CDC). Zelaya CE, Dahlhamer JM, Lucas JW, Connor EM. Chronic pain and high-impact chronic pain among U.S. adults, 2019. NCHS Data Brief, no 390. Hyattsville, MD: National Center for Health Statistics. 2020.)

## OVERVIEW

As technological innovations have fostered development in the field of telerehabilitation, the coronavirus pandemic has spurred rapid transformation in health care. Before understanding how to best implement telerehabilitation for the purposes of pain management, it is useful to revisit the general principles of telemedicine. The roles and capabilities of telemedicine are dynamic, and the World Health Organization has identified 4 central pillars:

1. “To provide clinical support
2. To overcome geographic barriers
3. The utilization of various types of information and communication technologies
4. To improve health outcomes.”<sup>6</sup>

Adapting these principles to the telerehabilitation of pain is particularly challenging given the sheer number and complexity of chronic pain syndromes. The nature of this complexity is captured by the newly revised definition of pain by the International Association for the Study of Pain as “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.”<sup>7</sup>

The International Association for the Study of Pain attempts to provide a contextual basis for this definition by laying out several important reflections. Fundamentally, pain is a separate phenomenon from nociception, meaning that the experience of pain cannot be ascribed to sensory neuron depolarizations alone. Beyond this elementary biological basis, pain is also impacted by both psychological and social factors. Furthermore, the conceptualization of pain as an experience is one that is learned from and shaped by a culmination of life experiences. Last, and perhaps most important from the perspective of a provider, a patient’s pain should be respected regardless of whether or not objective findings are present.<sup>7</sup>

Managing pain through telerehabilitation has many challenges and, despite advancements in technology, such as video conferencing, has several drawbacks. These limitations include interpreting nonverbal cues, rapport building, and performing an in-depth physical examination, all of which are necessary components for pain management. Therefore, approaching the diagnosis of pain etiologies by telemedicine requires a systematic approach, including a focused pain history, physical observation, and a mental health assessment. Combining these elements with a knowledge of pain physiology can assist in identifying the pain generator and assist in designing a therapeutic blueprint. The treatment of pain should also be met systematically. Therapeutic measures should concentrate on evidence-based approaches that minimize risk, provide holistic and integrated care, and enrich function and quality of life.

## A GENERAL APPROACH TO THE TELEDIAGNOSIS OF CHRONIC PAIN

A virtual evaluation will likely be a new experience for most patients. To improve a patient’s response to this format, a few general considerations should be taken into account before and during a visit. The office space of the telehealth provider should be professional, use appropriate lighting, and be equipped with a high-quality camera and microphone to best imitate a face-to-face evaluation. Additionally, from an individual standpoint, the telehealth provider should look into the camera rather than at their computer screen to better facilitate eye contact. The provider should also pay close attention to delay in terms of audio and video input and output to allow patients to fully express their thoughts without interruption. Physicians rely on their skills of

observation on a daily basis, but it may be even more important when transitioning to a virtual environment. Subtle changes in language, tone, sound, facial expression, and movement can all be windows into the thoughts and feelings of a patient. Last, an expression of compassion toward the patient comes as second nature in an in-person evaluation; however, much of this nuance may be lost in a video format. It is, therefore, important for the telehealth provider be attentive and convey empathy during the session.

## EVALUATION

### *Clinical History*

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Similar to a traditional in-person evaluation, the initial telemedicine evaluation for a chronic pain complaint begins with the clinical history (**Box 1**). The clinical history not only localizes the pain, but also distinguishes whether the pain is somatic, visceral, neuropathic, or mixed in etiology. The history also provides invaluable information in terms of what measures have previously been attempted in alleviating the pain complaints and can, therefore, guide consideration for future therapies. Qualitative tools should also be used to augment the clinical history by assessing the impact of pain on the patient's physical, emotional, and social functioning. Last, a thorough assessment will include a consideration of the patient's cultural background, personality, and psychological status. Within the context of telemedicine, patients can be sent a battery of validated assessment tools gauging pain and psychosocial factors before their visit.

As mentioned elsewhere in this article, pain is a highly subjective experience and requires the identification of a metric that can be monitored over time and serve as a measure for response to treatment. There are many tests available that assess a patient's pain intensity and include single metric questions and comprehensive surveys. The tools discussed in this article can be provided to a patient before their scheduled appointment and reviewed at the time of the visit.

#### **Box 1**

##### **Pain clinical history prompts**

- What is the intensity of pain or discomfort on a 0 to 10 scale?
- When did the pain start?
- Was there any preceding injury or surgery before the onset of pain?
- Where is the pain located?
- Does the pain radiate or change with activity?
- What is the quality of pain (sharp, dull, throbbing, aching, tingling, numbness, burning, shooting)?
- What activity or posture provokes the pain?
- What alleviates the pain?
- What medications have you tried, and did they help?
- What therapies have you tried?
- What additional modalities have you tried?
- How does the pain affect your day-to-day activities?

### Unidimensional Self-Report Scales

Unidimensional self-report scales typically operate on a “0 to 10” scale or in a derivative fashion. These scales are simple, valid, and reliable in both clinical and research settings.<sup>8</sup> Examples include the Numeric Rating Scale, Verbal Rating Scale, visual analogue scale, and Wong-Baker FACES pain rating scale (Figs. 2 and 3).

### Multiple Dimension Instruments

These tools provide a more comprehensive evaluation of a patient’s subjective pain experience oftentimes by taking in account the impact of pain on quality of life and function. Examples include the commonly used McGill Pain Questionnaire (Fig. 4) and Brief pain inventory (Fig. 5), which incorporates the impact of chronic pain on day to day functioning.

### Physical Examination

Perhaps the most obvious limitation of a telehealth visit is the inability to perform a direct physical examination. For pain conditions, a thorough physical examination is integral to making an accurate diagnosis. It is, therefore, imperative to understand the strengths and limitations of the virtual examination. In general, the virtual examination for a pain visit follows a standard in-person examination. The telehealth provider should localize the presenting symptoms to the appropriate anatomic body part by history and proceed with inspection, palpation, range of motion, and special testing.

### Inspection

Valuable information can be gleaned from simple observation. To facilitate observation via camera, the patient should be instructed to wear a short-sleeved shirt and shorts for the virtual examination. Next, correct laterality should be determined because the video feed may be mirrored. Therefore, before beginning any virtual examination, the patient should be asked to indicate which side is right and which side is left. Once the logistics are established, the inspection can begin.

The provider should initiate the observation portion of the examination by assessing general appearance. Hygiene, grooming, and affect are all characteristics that can be

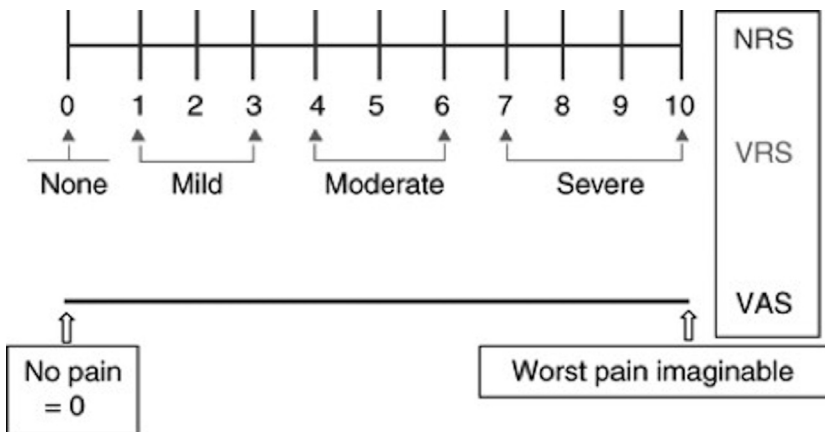
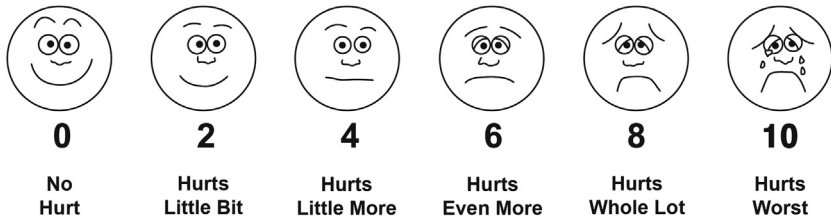


Fig. 2. Numeric rating scale (NRS), verbal rating scale (VRS), and visual analog scale (VAS). (From Breivik H, Borchgrevink PC, Allen SM, et al. Assessment of pain. *British Journal of Anaesthesia*. 2008;101(1):17-24. <https://doi.org/10.1093/bja/aen103>.)



**Fig. 3.** Wong-Baker FACES Pain Rating Scale. Explain to the person that each face represents a person who has no pain (hurt), or some, or a lot of pain. Face 0 doesn't hurt at all. Face 2 hurts just a little bit. Face 4 hurts a little bit more. Face 6 hurts even more. Face 8 hurts a whole lot. Face 10 hurts as much as you can imagine, although you don't have to be crying to have this worst pain. Ask the person to choose the face that best depicts the pain they are experiencing. (From Wong-Baker FACES Foundation (2020). Wong-Baker FACES® Pain Rating Scale. Retrieved [11/7/20] with permission from <http://www.WongBakerFACES.org>.)

adequately assessed by the virtual examination and may provide significant insight into a patient's mood and state of mind. After assessing general appearance, the provider should locate the anatomic region of interest as determined by the clinical history. Any obvious asymmetry from right to left, atrophy, hypertonicity, anatomic deformity, discoloration, or presence of swelling should be noted.

### **Palpation**

The difference between pain as a subjectively reported symptom versus tenderness, which is objectively inferred by a health care provider, often relies upon palpation. Within a virtual examination, the provider must rely on the patient to report the findings of palpation. Palpation as a means to obtain objective data is therefore limited in a virtual examination because it is difficult to determine how much pressure is being applied by the patient or assistant during palpation. Despite this limitation, palpation is useful in determining the focal point of a patient's pain; the provider can instruct a patient or family member toward anatomic landmarks. Palpation is also useful in the assessment of abnormal findings to gauge temperature, which may be increased with inflammation. Swelling can be palpated to determine underlying mobility, edema, or induration. Areas of erythema can be palpated to determine blanching; last, areas of asymmetry can be palpated to determine whether soft tissue laxity or osseous reducibility exists.

### **Range of motion**

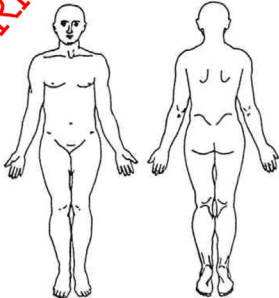
Before assessing for range of motion, patients should be instructed to position themselves or the camera to allow for a full body view. Additionally, providers should assess whether there exists enough space for the patient to safely move without restriction such that all planes of motion can be captured. Unfortunately, for the virtual physical examination, only active range of motion can be assessed. Passive range of motion can, however, be assessed with the assistance of a family member, friend, or assistant.

For any given joint, all planes of motion should be tested to their fullest extent. Careful attention should be paid to the smoothness of action and any restrictions to the degree of expected motion. Any deviations from full range of motion should be assessed for a limitation owing to pain or to an intrinsic defect of the joint itself. It is important to keep in mind that any patient that can actively resist gravity with respect to a particular joint movement is displaying at least a grade 3/5 motor strength for that muscle.

**McGILL PAIN QUESTIONNAIRE**  
RONALD MELZACK

Patient's Name \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ am/pm

PRI: S \_\_\_\_\_ A \_\_\_\_\_ E \_\_\_\_\_ M \_\_\_\_\_ PRI(T) \_\_\_\_\_ PPI \_\_\_\_\_  
 (1-10) (11-15) (16) (17-20) (1-20)

1 FLICKERING QUIVERING PULSING ~ THROBING BEATING POUNDING	11 TIRING EXHAUSTING 12 SICKENING SUFFOCATING 13 FEARFUL FRIGHTFUL TERRIFYING	BRIEF MOMENTARY TRANSIENT	RHYTHMIC PERIODIC INTERMITTENT	CONTINUOUS STEADY CONSTANT
2 JUMPING FLASHING ~ SHOOTING	14 PUNISHING GRUELLING CRUEL VICIOUS KILLING			
3 PRICKING BORING DRILLING ~ STABBING LANCINATING	15 WRETCHED STUNNING 16 ANNOYING TROUBESOME MISERABLE INTENSE UNBEARABLE			
4 SHARP CUTTING LACERATING	17 SPREADING RADIATING			
5 PINCHING PRESSING GNAWING ~ CRAMPING CRUSHING				

**Fig. 4.** McGill pain questionnaire. (From Melzack R. The McGill Pain Questionnaire: major properties and scoring methods. Pain 1975; 1:277-99; Mapi Research Trust, Lyon, France, <https://eprovide.mapi-trust.org>, with permission.)

**Special testing**

Last, in the absence of a nonclinician assistant, consideration must be placed for a patient’s functional level when deciding upon which special tests to perform. There are several special tests that can be performed by the patient alone with adequate instruction and guidance from the telehealth provider. In general, the smaller the joint under consideration, the greater the feasibility of a nonassisted special test. For example, special testing of the hands including Phalen’s test, Tinel’s sign, Finkelstein test, and the CMC grind can generally be easily imitated by the patient. Special testing of the larger joints such as the lumbar spine or the hips requires an assistant, but can be achieved with guidance.<sup>9</sup>

**Telehealth provider considerations**

Throughout the virtual examination, it is critical to the success of a telehealth visit that the provider constantly be attuned to the subtle changes of a patient. Changes in facial expression, grimaces, and breathing patterns all provide insight into what a patient may be feeling without the need for verbal expression. The subtle reactions of a patient to any active or special testing maneuvers can not only guide the clinician, but also solidify the diagnosis.

**Mental Health Assessment**

A chronic pain evaluation is not complete without, at a minimum, a psychosocial screen. The simultaneous treatment of comorbid mental health disorders has been demonstrated to improve chronic pain symptoms.<sup>10,11</sup> Additionally, the psychosocial factors of any individual experiencing chronic pain cannot be understated and are



STUDY ID #:	DO NOT WRITE ABOVE THIS LINE	HOSPITAL #:
<b>Brief Pain Inventory (Short Form)</b>		
Date: / /	Time:	
Name: Last First Middle Initial		
1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these every-day kinds of pain today?		
1 Yes                      2 No		
2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.		
3. Please rate your pain by circling the one number that best describes your pain at its <b>worst</b> in the last 24 hours.		
0 1 2 3 4 5 6 7 8 9 10 No Pain Pain as bad as you can imagine		
4. Please rate your pain by circling the one number that best describes your pain at its <b>best</b> in the last 24 hours.		
0 1 2 3 4 5 6 7 8 9 10 No Pain Pain as bad as you can imagine		
5. Please rate your pain by circling the one number that best describes your pain on the <b>average</b> .		
0 1 2 3 4 5 6 7 8 9 10 No Pain Pain as bad as you can imagine		
6. Please rate your pain by circling the one number that tells how much pain you have <b>right now</b> .		
0 1 2 3 4 5 6 7 8 9 10 No Pain Pain as bad as you can imagine		
7. What treatments or medications are you receiving for your pain?		
8. In the last 24 hours, how much relief have pain treatments or medications provided? Please circle the one percentage that most shows how much relief you have received.		
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% No Relief Complete Relief		
9. Circle the one number that describes how, during the past 24 hours, pain has interfered with your:		
<b>A. General Activity</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>B. Mood</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>C. Walking Ability</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>D. Normal Work (includes both work outside the home and housework)</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>E. Relations with other people</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>F. Sleep</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<b>G. Enjoyment of life</b>		
0 1 2 3 4 5 6 7 8 9 10 Does not Interfere Completely Interfere		
<small>Copyright 1991 Charles S. Cleeland, PhD Pain Research Group All rights reserved.</small>		

**Fig. 5.** Brief pain inventory. (Copyright ©2009. MD Anderson Cancer Center. Reproduced from Cleeland CS. The Brief Pain Inventory User Guide. Available from: [https://www.mdanderson.org/documents/Departments-and-Divisions/Symptom-Research/BPI\\_UserGuide.pdf](https://www.mdanderson.org/documents/Departments-and-Divisions/Symptom-Research/BPI_UserGuide.pdf).)

predictive of morbidity.<sup>12</sup> Therefore, validated screening tools for mental health disorders, patterns in cognition, and alcohol or substance use disorder is an absolute necessity. The surveys described in this article can be combined in a single packet with the aforementioned unidimensional and multidimensional instruments for pain and delivered to the patient before evaluation by the telehealth provider.

#### Mental Health Screening Tools

Depression: Patients Health Questionnaire-9

Anxiety: General Anxiety Disorder-7

Post-traumatic stress disorder: Primary Care PTSD for DSM-V

Bipolar disorder: Mood Disorder Questionnaire

Pain catastrophizing scale

Alcohol or substance use screening tools

CAGE Adapted to Include Drugs

## TREATMENT

### Pharmacologic

Pharmacologic treatments for pain and rehabilitation in telemedicine are selected in a similar fashion to in-person visits. According to the diagnosis, treatments may be chosen for somatic, visceral, neuropathic, and mixed pain etiologies. Common medications that are used in pain and rehabilitation include nonsteroidal anti-inflammatory drugs (NSAIDs), opioids, acetaminophen, and medications for muscle spasm and neuropathic pain. NSAIDs provide analgesic and anti-inflammatory properties by preventing the creation of proinflammatory prostaglandins.<sup>13</sup> NSAIDs also bind and block the cyclo-oxygenase-2 enzyme to decrease prostanoid production and relieve pain. **Table 1** includes common NSAID medications and dosing. Opioids produce pain relief

Medication	Starting Dose	Usual Dosing Range	Other
Aspirin	325 mg 3 times a day	325–650 mg 4 times a day	Doses of 3600 mg/d are needed for anti-inflammatory activity
Celecoxib	100 mg/d	100 mg twice daily or 200 mg/d	
Diclofenac XR	100 mg/d	100–200 mg/d	
Diclofenac IR	50 mg twice a day	50–75 mg twice a day	
Etodolac	300 mg twice a day	400–500 mg twice a day	
Ibuprofen	200 mg 3 times a day	1200–3200 mg/d in 3 to 4 divided doses	Available OTC and Rx
Indomethacin	25 mg twice a day	Titrate dose by 25–50 mg/d until pain controlled or maximum dose of 50 mg 3 times a day Can titrate to 75 mg SR twice daily if needed	
Indomethacin SR	75 mg SR once daily		
Ketoprofen	50 mg 3 times a day	50–75 mg 3 to 4 times a day	
Meloxicam	7.5 mg/d	15 mg/d	
Naproxen	250 mg twice a day	500 mg twice a day	Available OTC and Rx
Naproxen sodium	220 mg twice a day	220–550 mg twice a day	
Naproxen sodium CR		375–750 mg twice a day	
Salsalate	500 mg twice a day	500–1000 mg 2 to 3 times a day	

*Abbreviations:* CR, controlled release; IR, immediate release; OTC, over-the-counter; Rx, prescription; SR, sustained release; XR, extended release.

*Data from* Buys LM, Wiedefeld SA. Osteoarthritis. In: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey L. eds. *Pharmacotherapy: A Pathophysiologic Approach*, 10e. McGraw-Hill; Accessed October 06, 2020. <https://accesspharmacy.mhmedical.com/content.aspx?bookid=1861&sectionid=133893029>.

by binding mu, kappa, and delta opioid receptors in the central nervous system to block the release of neurotransmitters that propagate pain signals. **Table 2** provides a summary of common oral opioids.<sup>14</sup> Of note, the Centers for Disease Control and Prevention and the Veterans Administration/Department of Defense do not recommend long-term opioid treatment for most patients with chronic pain.<sup>15,16</sup> If opioids are used, proper safety precautions should be in place, including long-term opioid consents, naloxone kit prescribing, prescription drug monitoring program review, and urine toxicology screening. Urine toxicology screening may be performed at an appropriate health care facility or laboratory to ensure confirmation screening, urine specific gravity, and the presence of adulterants.

Medication monitoring will need to be planned before prescribing pharmacologic treatments. **Table 3** includes common adverse drug reactions and monitoring parameters. For example, if laboratory monitoring is not feasible, alternative treatments should be chosen. Many pharmacies can also mail prescriptions to patient's residences and provide telephonic medication counseling.

Pharmacologic treatments can be provided by remote prescribing only after a patient–provider interaction. The Ryan Haight Online Pharmacy Consumer Protection

<b>Table 2</b>		
<b>Common opioid dosing</b>		
<b>Medication</b>	<b>Usual Dosing Range</b>	<b>Other</b>
Morphine	PO 5–30 mg every 4 h SR 15–30 mg every 12 h (may need to be every 8 h in some patients)	Drug of choice in severe pain, use with caution in renally compromised patients
Hydromorphone	PO 2–4 mg every 4–6 h	Use in severe pain
Codeine	PO 15–60 mg every 4–6 h	Use in mild to moderate pain
Hydrocodone	PO 5–10 mg every 4–6 h	Use in moderate/severe pain
Oxycodone	PO 5–15 mg every 4–6 h CR 10–20 mg every 12 h	Use in moderate/severe pain
Fentanyl	Transdermal 25 µg/h every 72 h Transmucosal, intranasal, and sublingual dosing based off of individual product	Do not use transdermal patch in acute pain Follow product-specific initiation and titration dosing recommendations
Methadone	PO 2.5–10 mg every 8–12 h	Effective in severe chronic pain Equianalgesic dose of methadone when compared with other opioids will decrease progressively the higher the previous opioid dose. Methadone prescribed for maintenance or detoxification treatment and must be dispensed under a Substance Abuse and Mental Health Services administration–certified opioid treatment program
Buprenorphine	Transdermal delivery systems 5, 7.5, 10, 15, 20 µg/h every 7 d Buccal film 75 µg every 12 h to 900 µg every 12 h	Second-line agent for moderate-to-severe pain May precipitate withdrawal in opiate-dependent patients Detailed manufacturer dosing conversion recommendations exist Buprenorphine products that contain naloxone (Suboxone) should be considered in patients with OUD). The prescribers of buprenorphine/naloxone products for OUD require a Drug Enforcement Agency waiver
Tramadol	PO 50–100 mg every 4–6 h ER PO 100 mg every 24 h	Maximum dose for nonextended release, 400 mg/24 h; maximum for extended release, 300 mg/24 h Decrease dose in patient with renal impairment and in the elderly

*Abbreviations:* CR, controlled release; ER, extended release; OUD, opioid use disorder; PO, oral; SR, sustained release.

*Data from* Herndon CM, Strickland JM, Ray JB. Pain Management. In: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey L. eds. *Pharmacotherapy: A Pathophysiologic Approach*, 10e. McGraw-Hill; Accessed October 06, 2020. <https://accesspharmacy.mhmedical.com/content.aspx?bookid=1861&sectionid=146063604>.

<b>Medication</b>	<b>Adverse Drug Reactions</b>	<b>Monitoring Parameters</b>	<b>Comments</b>
Acetaminophen	Hepatotoxicity	Total daily dose limits	Use caution with multiple acetaminophen-containing products—total 4 g per 24-h limit
Opioids	Sedation, constipation, nausea, dry mouth, hormonal changes	Periodic assessment of renal (serum creatinine, eGFR) and hepatic (LFTs) function If methadone is used, EKG should be obtained before initiating treatment, at 30-d follow-up, and at least annually thereafter	Risks of addiction, dependence, and drug diversion
NSAIDs	Dyspepsia, cardiovascular events, GI bleeding, renal impairment	BUN/creatinine, hemoglobin/hematocrit, blood pressure	Risks higher in those older than 75 y of age

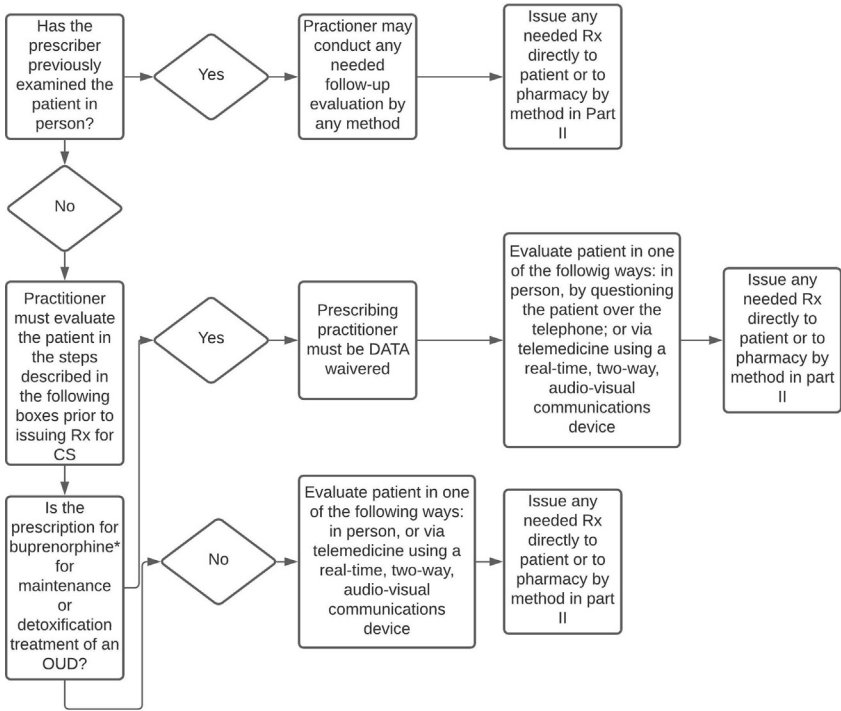
*Abbreviations:* BUN, blood urea nitrogen; eGFR, estimated glomerular filtration rate; EKG, electrocardiogram; GI, gastrointestinal; LFT, liver function test.

*Data from* Buys LM, Wiedefeld SA. Osteoarthritis. In: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey L. eds. *Pharmacotherapy: A Pathophysiologic Approach*, 10e. McGraw-Hill; Accessed October 06, 2020. <https://accesspharmacy.mhmedical.com/content.aspx?bookid=1861&sectionid=133893029>.

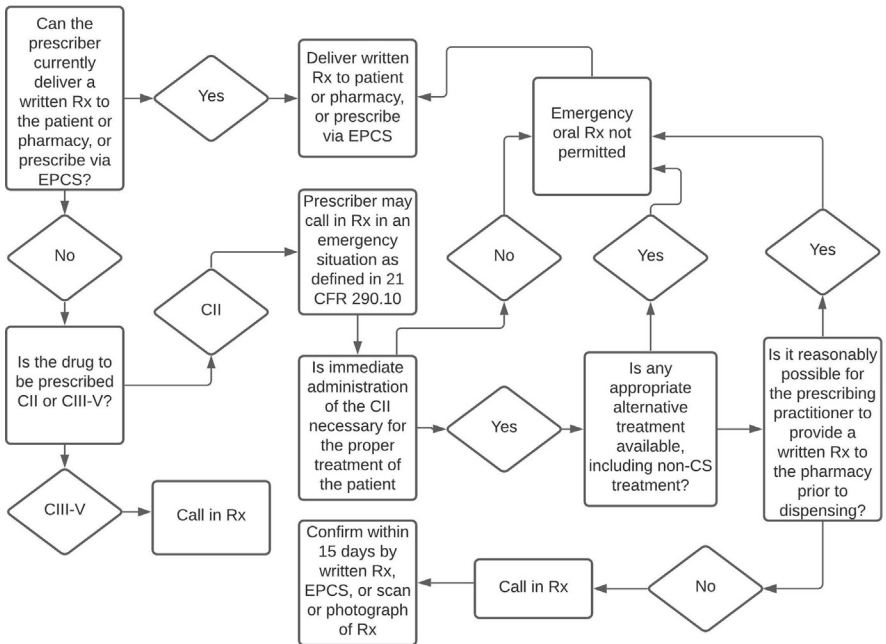
Act of 2008 requires an in-person patient examination before delivering, distributing, or dispensing controlled substances. The Ryan Haight Act was drafted in response to Internet pharmacies that were dispensing controlled substances online without prescribers seeing and evaluating the patient.<sup>17</sup>

In March of 2020, the Drug Enforcement Agency (DEA) detailed exceptions to the Ryan Haight Act to allow controlled substance prescribing via telehealth without a prior in-person visit and examination.<sup>18</sup> The designation of a Department of Health and Human Services public health emergency allows DEA-registered practitioners to issue controlled substances without a prior in-person evaluation if the following conditions are met: (1) the prescription is issued for a legitimate medical purpose in the normal course of the professional practice, (2) the telehealth platform uses audio-visual, real-time, 2-way communication, and (3) the practitioner is acting in accordance with applicable federal and state laws. The public health emergency exception applies to all schedule II through V controlled substances in all areas of the United States. The exemption rules remain in effect for as long as the public health emergency is in place. The designation of a public health emergency may also activate Section 1135 Waiver of the Social Security Act, which, for example, may waive or modify Medicare, Medicaid, Children's Health Insurance Program, and Health Insurance Portability and Accountability Act requirements to allow health care services to meet individuals' needs.<sup>19</sup> **Fig. 6** outlines the process of providing controlled substances to patients via telehealth as per DEA regulations. For additional information, the DEA has also published a coronavirus disease-2019 related informational webpage at [www.deadiversion.usdoj.gov/coronavirus.html](http://www.deadiversion.usdoj.gov/coronavirus.html).<sup>20</sup>

Part I: Evaluating the Patient



Part II: Delivering the Rx to the Pharmacy



### **Nonpharmacologic**

The management of chronic pain frequently requires a multidisciplinary approach that takes advantage of pharmacologic and nonpharmacologic modalities. The nonpharmacologic modalities are well-suited for a telerehabilitation approach. Evidence-based, nonpharmacologic therapies for the management of pain are generally encompassed within 3 broad categories: psychological and behavioral therapies, exercise and movement therapies, and manual therapies. Of these 3 categories, the psychological and behavioral therapies have an advantage in terms of evidence as well as ease of delivery. Although the exercise and movement therapies contain several therapies such as Tai Chi and yoga that are beneficial for chronic pain, there currently is insufficient evidence supporting its use via telemedicine.<sup>21,22</sup> Last, the manual therapies require a hands-on approach by a licensed provider and therefore fall out of the scope of telerehabilitation.

The overall philosophy of the psychological and behavioral therapies are similar in that they are all biopsychosocial interventions. As a result, their delivery to patients also follow similar schemata.<sup>23</sup> These therapies are time-limited protocols that are delivered by a trained expert in a standardized format and rely on goal-oriented lessons, active participation, and the tracking of progress by objective metrics.<sup>24</sup> Three well-known psychological and behavioral therapies that have found sufficient evidence in the treatment of chronic pain via telemedicine are cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness-based stress reduction.

#### **Cognitive behavioral therapy**

CBT is a form of active psychotherapy that uses the interconnected nature of thoughts, behaviors, and feelings as a model to effect change. Within the context of pain management, the goal of CBT is to diminish both the maladaptive patterns of thoughts and behaviors that drive feelings of pain.<sup>25</sup> In a 2012 Cochrane review of randomized clinical trials addressing chronic pain with CBT versus usual treatment or wait-listed controls, CBT was found to have small effects on decreasing pain and disability, as well as moderate effects on easing catastrophizing thoughts.<sup>26</sup>

CBT with the use of video chat can easily be practiced within the comfort of a patient's home. The application of CBT through technological innovations has also shown to be beneficial in the management of chronic pain through randomized clinical trials. In the 2017 Cooperative Pain Education and Self-management (COPES) trial, interactive voice response CBT was found to be noninferior to in-person CBT in the management of chronic back pain. Patients randomized to the interactive voice response CBT arm were provided a self-help manual as well as weekly pre-recorded feedback from their therapist based on their outcome metrics. At the conclusion of the 3-month trial, the primary outcome of average pain measured by the Numeric Rating Scale was  $-0.77$  for the interactive voice response CBT arm and

**Fig. 6.** DEA-compliant prescribing of controlled substances via telehealth. C, schedule; CS, controlled substance; DATA, Drug Addiction Treatment Act of 2000; EPCS, electronic prescriptions for controlled substances; OUD, opioid use disorder; Rx, prescription. Note: <sup>a</sup>Methadone cannot be prescribed for maintenance or detoxification treatment and must be administered or dispensed directly to the patient for that purpose. 21 CFR 1306.07(a). (From How To Prescribe Substances To Patients During The COVID-19 Public Health Emergency. Drug Enforcement Agency: 2020. [https://www.deadiversion.usdoj.gov/GDP/\(DEA-DC-023\)\(DEA075\)Decision\\_Tree\\_\(Final\)\\_33120\\_2007.pdf](https://www.deadiversion.usdoj.gov/GDP/(DEA-DC-023)(DEA075)Decision_Tree_(Final)_33120_2007.pdf). Accessed November 12, 2020.)

−0.80 for the in-person CBT arm with a mean difference between groups of 0.07 (95% confidence interval, −0.67 to −0.80). Interestingly, patients in the virtual arm of the study also participated in more sessions than the in-person arm (mean difference, 2.3;  $P < .001$ ).<sup>27</sup>

### **Acceptance and commitment therapy**

ACT is a subset of CBT and is a relatively newer form of behavioral psychotherapy. The major aim of ACT is to promote psychological flexibility, examining thoughts as they come and go rather than wrestling with negative feelings. In contrast, CBT attempts to change fundamental beliefs. In this way, ACT can be thought of as a more passive engagement as compared with CBT.<sup>28</sup> In a 2017 systematic review and meta-analyses of 11 randomized controlled trials with a total sample size of 863, participation in ACT compared with control conditions was found to have medium to large effect sizes on pain acceptance and psychological flexibility, as well as small to medium effect sizes on improved functioning, anxiety, and depression.<sup>29</sup>

A 2017 randomized noninferiority trial of 129 veterans demonstrated that ACT delivered by a video teleconferencing platform was as effective as in-person therapy in terms of the primary outcome of pain interference. This study also supported noninferiority of video teleconferencing delivery in regard to several secondary outcomes including mental and physical health quality of life.<sup>30</sup> Given the benefits of ACT for managing chronic pain as well as improving function and overall quality of life, transitioning toward a video-based platform is an option in situations of poor access to therapy.

### **Mindfulness-based stress reduction**

Mindfulness-based stress reduction seeks to reframe a patient's relationship to pain through detached self-observation.<sup>31</sup> Mindfulness-based interventions have the benefit of being simple to use and least reliant on technology. Instructions and protocols can be delivered to patients through a variety of mediums, including written instructions, telephone, video conferencing, and smartphone applications. Compared with CBT and ACT, there is less evidence supporting the use of mindfulness-based stress reduction for chronic pain. There are, however, meta-analyses demonstrating that mindfulness interventions for chronic pain do have small beneficial effects on pain symptoms as well as mental and physical health quality of life metrics.<sup>32,33</sup> Tele-mindfulness interventions have also demonstrated significant improvements in key aspects of chronic pain syndromes, including pain catastrophizing, suffering levels, and mental health.<sup>34</sup>

### **Exercise therapies**

Exercise-based therapy and physical therapy oftentimes form the foundation for conservative treatment of musculoskeletal pain. Moreover, regular physical activity is widely accepted to be essential for overall quality of life, mood, and function. A 2017 Cochrane review examining physical activity and exercise-based interventions for chronic pain suggests that exercise interventions yield improved pain severity, physical function, and quality of life, albeit with a low level of evidence. Importantly, these findings were also in the setting of minimal adverse events.<sup>35</sup> Similar findings were found in a telemedicine approach. A 2017 systematic review with a total sample size of 3575 concluded that compared with no intervention, telemedicine-based exercise intervention was beneficial for reducing pain in patients experiencing chronic pain.<sup>36</sup> Although there is a lack of strong evidence for the treatment of chronic pain with an exercise-based intervention, patients should be encouraged to maintain mobility through appropriate exercise and activity. Last, we defer the discussion of any specific physical therapies or exercises, because the musculoskeletal pain

conditions that would benefit from physical medicine typically require a highly individualized movement regimen.

## SUMMARY

Telerehabilitation for pain management uses communication technology to minimize barriers posed by geographic separation. Access to such technology has proven critically important during the coronavirus disease-2019 pandemic, but has also been useful in patients with chronic pain disorders who are unable to travel because of physical limitations. The evaluation and treatment of such disorders requires a whole health approach that individualizes treatment options and delivers care through a biopsychosocial approach. Although circumstances surrounding the need for telerehabilitation use may vary, including lack of reliable transportation to a medical facility, physical limitation precluding transport, or mitigation of person-to-person transmission of an illness, the goals of care are unchanged from an in-person patient-provider experience. Telerehabilitation can be successfully implemented in pain management with appropriate consideration for staging an evaluation, a structured approach to the visit, the use of standard clinical metrics, and the appropriate application of pharmacologic and nonpharmacologic treatments.

## CLINICS CARE POINTS

- During the coronavirus disease-2019 pandemic, there have been temporary policy changes for telehealth to allow Health Insurance Portability and Accountability Act flexibility, expansion of covered services, and reimbursement equivalent to in-person visits.
- Telerehabilitation for pain management can be offered in conjunction with, or in lieu of, in-person interaction. For example, a hybrid model may include an initial in-person consultation with options for virtual and/or in-person follow up visits.
- Confirm the patient's location, telephone number, emergency contact, and proximity to others during the initial stages of the visit in case communication becomes compromised or emergency medical services need to be rendered.
- If the patient lacks access to a secure environment, options should be provided to them to ensure their comfort, privacy, and safety.
- Avoid clothing with stripes or patterns because they can cause video distortion.
- When available, a designated individual may accompany the patient to assist with camera operation during the physical examination.

## DISCLOSURE

The authors have nothing to disclose.

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