NIH Pain Consortium
Centers of Excellence in Pain Education

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Opioid Overdose Risk and Naloxone

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Introduction

This module covers opioid overdose risk and naloxone.

After completing this module, you should be able to:

- Identify diagnostic criteria for opioid use disorder (OUD).
- Describe risk factors for OUD.
- Develop a risk mitigation plan.
- Identify patients at risk of opioid overdose.
- Describe signs and symptoms of opioid overdose.
- Describe how to administer various formulations of naloxone.

The module features seven categories:

- Opioid Safe Use
- Interview Owen
- Review Chart
- Make Plan
- Follow-up
- Additional Learning Resources

Meet Owen

Owen has been suffering from low back pain for several years. His pain has been relatively well controlled up until recently when he's had some problems with his pain and his treatments. Take some time to learn more about Owen, his pain syndrome, and the safe use of opioid analgesics.

Opioid Safe Use

Equianalgesic Dosing

Equianalagesic refers to the approximate dose of an opioid which is required to elicit the same analgesic benefit of another opioid. Most opioids are compared to each other in terms of equianalgesic dose compared to oral morphine. While imprecise, these equianalgesic ratios are now being used to approximate the risk of harm from a particular dose of an opioid. See below for a chart of relative equianalgesic ratios of some commonly used opioids.

Drug	**Equianalgesic Doses (Parenteral)**	**Equianalgesic Doses (Oral)**
Morphine	10	30
Buprenorphine	0.3	0.4 (sl)
Codeine	100	200
Fentanyl	0.1	NA
Hydrocodone	NA	30
Hydomorphone	1.5	7.5
Meperidine	100	300
Oxycodone	10 *(not available in the US)*	20
Oxymorphone	1	10
Tramadol	100 *(not available in the US)*	120[1]

[1] McPherson ML. *Demystifying Opioid Coversion Calculations: A Guide For Effective Dosing*. Amer Soc of Health-Systems Pharm, Bethesda, MD, 2010. Copyright ASHP, 2010. Used with permission. NOTE: Learner is STRONGLY encouraged to access original work to review all caveats and explanations pertaining to this chart.

There are good opioid equianalgesic dose calculators online from the following:

ClinCalc

Global RPh

Practical Pain Management

CDC Recommendations

The CDC Guideline for Prescribing Opioids for Chronic Pain [2]provide 12 key recommendations for safe opioid prescribing and are paraphrased as follows:

1. Use nonpharmacologic and non-opioid modalities for pain prior to opioid modalities when possible.
2. Establish realistic treatment goals with the patient.
3. Discuss known risks and realistic benefits of the drug therapy.
4. When opioid therapy is required, immediate release opioids preferred.
5. Use the lowest dose possible with careful consideration when exceeding 50 mg of morphine equivalents daily and avoiding greater than 90 mg of morphine equivalents daily without “justification.”
6. Prescribe opioids for the shortest duration possible with less than or equal to 3 days typically sufficient and greater than or equal to 7 days “rarely necessary.”
7. Evaluate benefits and harms of ongoing opioid use regularly.

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[2] Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain – United States, 2016. MMWR Recomm Rep 2016;65:1-49. DOI: http://dx.doi.org/10.15585/mmwr.rr6501e1

8. Assess adherence to therapy and aberrant drug taking behaviors by performing random urine drug screening.
9. Avoid concurrent prescribing of benzodiazepines with opioids.
10. Frequently assess for opioid use disorder and offer medication assisted therapy (e.g., methadone or buprenorphine/naloxone).

Risk Mitigation Strategies

Risk mitigation strategies include:

- FDA Risk Evaluation and Mitigation Strategies
- Prescription Drug Monitoring Program Review
- Random urine, saliva, or blood toxicologic screening
- Observed pill counts
- Abuse deterrent formulations
- Risk assessment using validated screening tools
- Interdisciplinary communication

Opioid Use Disorder

Opioid Use Disorder is a neurobiological disorder characterized by:

1. Use in larger amounts or longer durations than intended
2. Personal desire to cut down or stop use, but unable to do so
3. Excessive time spent in getting, using, or recovering from opioids
4. Cravings
5. Failure to honor personal commitments
6. Ongoing use despite known harm to relationships or health
7. Worsening physical or psychological problems
8. Tolerance
9. Withdrawal

Risk factors for opioid use disorder include:[3]

1. Family history of alcohol abuse
2. Family history of illegal/illicit drug abuse
3. Family history of prescription drug abuse
4. Personal history of alcohol abuse
5. Personal history of illegal/illicit drug abuse
6. Personal history of prescription drug abuse
7. Personal history of ADD, OCD, bipoloar, schizophrenia
8. Personal history or depression or anxiety

Click here to see a common scoring tool for assessing opioid abuse risk. You will need this information later in the module.

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[3] Webster LR. Anesth Analg 2017;125(5):1741-1748.

Naloxone Co-Prescribing

Naloxone is a non-selective, centrally-acting opioid antagonist available for administration either parenterally or intranasally.

Key take-aways:

Co-prescribing of naloxone should always be considered when prescribing opioids or when illicit opioid use is suspected

Many states have enacted laws to increase access to naloxone

Patients or care-givers should be properly educated on the use of naloxone in the event of an opioid overdose

For a brief review of available FDA approved naloxone delivery methods and administration considerations, click here.

The following describes a video showing three FDA approved naloxone delivery methods.

White text on a black background reads, *"Opioid Overdose: Administration of Naloxone."*

"Today we will demonstrate the three FDA approved Naloxone delivery methods for the treatment of opioid overdose."

The text fades and is replaced by a shot of a tabletop from above. Two hands rest on the table at the top of the screen. Below the hands, an Evzio® auto injector lies on the table on the left of the screen. Next to it is a nasal delivery version of naloxone. To the right of both lies a little bottle of naloxone, with a sealed disinfecting wipe sitting right above it, while to its right lies a capped syringe.

"Please note that the nasal atomizer, while still being used by some, is not included in this demonstration video."

The hands move to pick up the Evzio auto injector. Text appears at the bottom of the screen that reads, *"Evzio® auto-injection."*

"The first delivery device is the naloxone auto injector. It is very easy to use and provides voice prompts to guide the administration in case of an overdose."

The shot changes to show the auto injector package opened, sliding an inner plastic container from the outer plastic sleeve. The shot switches to show the broad side of the auto injector that includes a small speaker on the top left of the device. A button in the center top of the device, to the right of the speaker, gives the audio instructions when pushed. Below the speaker and button, a sticker decal shows instructions on how to give the injection. At the bottom is a red plastic tab.

The button is pushed, and the following can be heard issuing from the speaker on the auto-injector:

"If you are ready to use, pull off red safety guard."

The video demonstrates the red safety guard being removed from the auto-injector, leaving a plastic black-banded strip at the end, surrounding the white plastic point of the auto-injector in the middle.

The audio instructions continue, *"To inject, place black end against outer thigh. Then press firmly and hold in place for five seconds."*

The video shows the safety guard being put back on to the auto-injector. The outer plastic sleeve is then replaced around the device.

The shot changes to show the auto-injector being held in front of the demonstrator, while a medical dummy lies on an examining table in front. The demonstrator takes off the outer plastic sleeve of the auto-injector, removes the red safety guard, and places the plastic black-banded end against the thigh of the dummy. Audio accompanies this demonstration:

"By removing the outer case, you will begin the voice instructions. Once you are ready to inject, remove the red safety guard from the device. As instructed, place the black end of the device and depress. Hold the device in place firmly against the outer thigh for five seconds."

During this time, the demonstrator pushes the device against the leg of the dummy and holds it while numbers representing each second passing by show on the screen.

The demonstrator replaces the auto-injector on the table and picks up the nasal naloxone injector. At the bottom of the screen, words reading *"Narcan® nasal spray"* show.

"The second device is the naloxone nasal spray."

The demonstrator shows how you can put your index finger and middle finger to either side of the protruding plastic cone jutting from the top of the nasal applicator. It's vaguely shaped like an upside down, white plastic 'Y.' The thumb then goes underneath where the plastic cone is mounted, while steadying it on top to either side with the aforementioned fingers.

"There is no preparation necessary prior to administration. Simply place the applicator side of the device in the overdose victim's nostril."

The demonstrator places the plastic cone part of the applicator up the left nostril of the medical dummy.

"Press the button at the bottom of the device. Do not attempt to prime the device."

The demonstrator does so, pressing the button underneath the plastic cone with a thumb. After holding the applicator in place for a few seconds, the demonstrator removes it and replaces it on the table.

"The third method for naloxone delivery is intramuscular injection."

The demonstrator picks up the little vial of liquid naloxone, while the words, "Naloxone injection" appear on the screen at the bottom.

"Small vials may be provided along with 3 cc syringes and 23 to 25 gauge 1.5 inch intramuscular needles in which the drug must be pulled into the syringe prior to delivery."

The demonstrator removes the yellow safety cap from the vial and places the vial back on the table, standing up right. Then he picks up the disinfecting wipe and tears open the package. Using the wipe, the demonstrator disinfects the top of the now exposed vial of naloxone.

Using the syringe, the demonstrator inserts the needle into the mesh top of the now disinfected top of the vial of naloxone. Raising the vial with the syringe now attached, with an overall angle of about 30 degrees, the demonstrator pulls out the plunger of the syringe, filling it with naloxone from the vial.

Removing the vial from the needle, the demonstrator holds the syringe upside down, and flicks the side of the plastic housing portion to dislodge any trapped air bubbles. He depresses the plunger slightly to void the air bubbles from the needle completely.

"Swabbing the vial with alcohol and removal of all air bubbles prior to intramuscular injection of naloxone is not a necessity in cases of emergency."

The demonstrator holds the prepared syringe of naloxone like a dart, between thumb and forefinger, with the other fingers of the hand steadying it, and jabs it firmly into the outer thigh of the medical dummy. The needle sinks into the dummy's skin all the way into where the plastic part of the syringe meets the needle. The demonstrator then smoothly pushes the plunge of the syringe all the way down.

"In fact, administer both the intramuscular naloxone and the auto injector directly through clothes if the amount of layers allows."

Replacing the guard on the needle, the demonstrator lays it back on the table, next to the now empty vial of naloxone.

The shot changes to show all three devices once more laying on the table. Above each appear their descriptions, as follows:

"Evzio® auto-injection, Narcan® nasal spray, Naloxone injection."

"These are the three FDA approved naloxone delivery methods. Remember, it's important to initiate emergency medical services, and place the overdose patient in the recovery position as soon as possible. Administration of second dose may be required after two to three minutes if no response. This brief demonstration video is brought to you by the National Institutes of Health Center of Excellence in Pain Education at Southern Illinois University Edwardsville."

Logos for Saint Louis University, Southern Illinois University Edwardsville, and the National Institutes of Health Pain Consortium Centers of Excellence in Pain Education all appear on the screen before the shot fades to white.

Interview Owen

Interview Subjects

Site of Pain

The following provides a description of the video of Owen describing his site of pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"*Pain on my back,*" he starts, "*is towards the lower part of my back; it's on the lower end. So, I don't know what the vertebrae are down there, they always tell you there's a number and a letter and all that. But, it's lower back pain,*" he says, nodding to emphasize his point.

"*Do I have pain that goes down into my legs?*" Owen continues. "*I would say a little bit. I have had some numbness in my legs and on my hip. You know, like a soreness. Usually, it doesn't flare up too bad, and usually it clears up fairly quickly.*"

Duration

The following provides a description of the video of Owen describing the duration of his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"*Yeah,*" Owen says, "*after some relief, unfortunately my back has started to flare up again and it has made life a little bit more difficult for me on a daily basis.*"

"*My back pain started, let me think here, about two years ago. It was Christmastime. I remember we were getting ready for some friends to*

come visit for a Christmas party, and I was moving a chair, like a cushion chair, not a folding chair. I was moving a chair and of course, I lifted the chair and didn't use my knees; I just used my back." Owen closes his eyes, shakes his head, and exhales sharply at the memory before continuing, *"I fell down like a sack of potatoes. I could not move, and my wife could not move me. Somehow, I managed to kind of crawl my way to a bed, where I sat, just almost comatose on the bed, for a couple hours. It was, actually a little embarrassing because you have people over, and you can't tell them not to come."*

"So, that's how it started," Owen says, nodding. *"Luckily, after a two-hour period, it got to the point where I could get out of the bed and start to walk around a little bit. But it was a rough night."*

Timing of Pain

The following provides a description of the video of Owen describing the timing of his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"My back pain does actually seem to adjust depending on the amount of movement that I do. When I wake up in the morning, it's really stiff. I feel like I can't even tie my shoes. So that is difficult. I kind of get out of bed, I take a shower, and then when I, you know, kind of get myself dressed and even putting on some of my clothes, it becomes kind of difficult. Then, I literally can't bend over to tie my shoe. I have to kind of try to get down on a knee and do that." Owen shrugs self-consciously and says, *"I almost feel like I should ask my wife to help me, but it's kind of embarrassing that way."*

"As the day goes on, I have some coffee, you know, that sort of thing, it seems to get a little better. It stretches out, and then of course when I go to work, I sit at a computer for most of the day, and as I sit, I start getting the tenseness again, the pain starts to creep in, and sometimes it gets to a point where I really need to stand up and try to walk around a bit."

Characteristics

The following provides a description of the video of Owen describing the characteristics of his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"*That pain in my lower back feels, like it's just a sharp, kind of pinching.*" Owen folds the fingers of both hands together like he's plucking something, before bringing both hands together to indicated how his pain feels to him. "*Like something's on a nerve,*" he says. "*Then the pain in my hip feels a little different. It feels like it's almost more of a soreness. Sort of like a joint thing potentially. I don't know, it's sort of an odd…I don't know if they're related or if I'm just, I hate to say it, getting old,*" Owen laughs.

"*The leg pain isn't as severe. The back pain can be really bad. If I just had the leg pain, I'd be thrilled, but it's just to be,*" he says, shaking his head in frustrated acceptance.

Severity

The following provides a description of the video of Owen describing the severity of his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"*At the moment, I actually feel probably that my pain would be four, maybe a five. You know, it's a little stiff. Obviously, I've been working all day and I'm sitting in this chair that doesn't help all that much, but overall I would rate my pain…it seems to be sort of a seven, maybe an eight in the morning. It may go down to a three as the day goes on, then kind of during periods through the day, move back up depending on how much I do or do not move, to like a five, and then kind of where I am now. Then, if I'm lucky, I can get home, lie down, and then sort of alleviate a bit. If I don't move too much, obviously I've learned to stay pretty steady when I*

sleep, because I also wear a C-PAP machine, you know, so yeah, then it isn't too bad, until of course, I wake up in the morning and have to actually get out of bed, it's problematic."

Alleviating Factors

The following provides a description of the video of Owen describing what alleviates his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"The medications I take really do help alleviate the pain, but I know that it's masking a bigger issue. I'll be honest, I don't know that there's anything that helps the pain except the medications at this point. Now, I know you sort of said that I should try to hopefully get some regular exercise, lose some weight, but it's hard. I'm not going to deny it." Owen rolls his eyes regretfully and says, *"I don't eat as well as I should, and getting exercise is not so easy to do with my lifestyle, I'm afraid."*

Aggravating Factors

The following provides a description of the video of Owen describing what aggravates his pain:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Oddly enough, the pain will change for odd reasons, like if I sneeze. Like you know, you sneeze, and all of a sudden, you feel it. I notice too, and I'm not sure how to categorize this, but if my hip bumps into the side of something, like you know, a table. I mean, that's a real reflexive kind of jumping like a sharp pain where I'll be like, 'Woah!'" and Owen jumps in his chair to underline his point. *"I feel that,"* he continues. *"It's hard to, you know, I've got to be real careful."*

Current Meds

The following provides a description of the video of Owen describing his current meds:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Okay, so my pain medication are as follows. I take an Oxycontin twice a day, which helps mitigate the pain. Then, I have some oxycodone, which on the prescription, you know, it says sort of 'take as needed if the pain flares up,' and lately I've been digging that one pretty hard. My back has been bothering me a lot, and so I have been taking that one on a fairly regular basis. Then, for the inflammation I have Celebrex, which again, I have to take twice a day."

"In terms of pain medication, I think that's it. I take, you know, something for heartburn, and I've got something for high blood pressure, so you know, I'm a mess."

Non-med Treatments

The following provides a description of the video of Owen describing his non-med treatments:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Some of the things that I try at home to try to mitigate or alleviate my pain, I tried a heat pad in the past, and it really didn't do much. So, I bought one of those TENS, those little things you stick on your back, and they do the electric shock and again it's one of those things that has helped for a little while. Like, it certainly gives you a little relief and you just have to keep at it. To be honest, you have to stick those little patches on your back, and then you have this little pack that you walk around with, and some nights, you're just like, 'Yeah, I just don't wanna do that.' So, again, it's temporary, and I feel like if I did a better job at keeping up with all of

these things that I might be better off than I am. But it's not as easy as just simply popping a couple of pills."

Med Adherence

The following provides a description of the video of Owen describing how well he follows his medication regimen:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Do I take my medications on a regular basis? I do my best. I find with the pain medications, I certainly do try to keep those going on a regular basis. The Celebrex, I'm not going to lie, I may have skipped out on one or two of those. You know, if you're in a rush in the morning, that kind of thing, that you just kind of forget to take it. But I try to stay fairly consistent with the drug treatment."

Med Use

The following provides a description of the video of Owen describing how he uses his meds:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"On the oxycodone, I have a feeling I'm going to hit the end of that prescription pretty quickly. I mean, it's helped. I mean, it's really made the days more bearable."

Social History

The following provides a description of the video of Owen describing his social history:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Ugh, my alcohol intake. Now you're going to start sounding like my wife. I have a stressful job, and I'm not going to lie, I like to enjoy some alcohol, I like to drink on occasion. I might say, I don't know, five, maybe six drinks a night, you know, it helps. It helps me relax, it helps me feel like I'm less tense when I do that. It's just something I feel I need just to get through the evening."

Family History

The following provides a description of the video of Owen describing his family history:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Is there any substance abuse in my family? I wouldn't say hard drugs and things like cocaine and marijuana, there's none of that. Though I will say my mom certainly did enjoy a nice vodka tonic on a regular occasion."

Physical Therapy

The following provides a description of the video of Owen describing what physical therapy he's completed:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"I went to physical therapy for six weeks, whatever the number of times I had to. Again, I will say that through the course of the six weeks, it felt better. I think the pain went down. It subsided, it was a little easier to get up in the morning. The problem is, is that you stop going, and unless you have somebody really helping you work all those joints and doing the stretches and things of that nature, it just starts to come back after a while."

"So, you, as a person, I guess, need to keep that regimen going, and I just, I can't do it. I'm not going to lie."

Injections

The following provides a description of the video of Owen describing his experience with corticosteroid injections:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"As I recall, you did send me for injections in my back, and I will say that initially the cortisone shots, they were really a lifesaver. The downside to that kind of stuff is that just over time, you get the injection, and it used to work for a month. Then, you get the next injection, it works for a couple weeks. So, just sort of the effectiveness of the injections kind of started to wear down, unfortunately."

Counseling

The following provides a description of the video of Owen describing how he feels about the thought of going to counseling:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"So, you want to send me to a counselor," Owen says, nodding thoughtfully. "How do I feel about that? You know, I guess it couldn't hurt.

At some point, you've got to be willing to try anything. If you think counseling is going to help, I'd be willing to give it a shot."

Impact on Relationships

The following provides a description of the video of Owen describing the impact of his pain on his relationships:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"Well, you have kids that want to do things with you, you have a wife, you know, that wants you to help her out around the house more or whatever. So, yeah, I would say that my pain has certainly affected my relationships, absolutely."

"When the pain flares up, I think that the levels of frustration, anxiety, just depression, I mean it all kind of shoots up with it. I think that there's a sort of 'woe is me' kind of attitude you get, where you're like, 'why do I have to deal with these problems?' Yeah. It's depressing."

Impact on Sleep

The following provides a description of the video of Owen describing the impact of his pain on sleep:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"My pain causes me to try, well, I would say that my pain and my CPAP kind of cause me to stay as rigid as possible in my bed. One thing that's helps is that I have one of those foam type mattresses that kind of contort to my body, and I think that's certainly helped, but it certainly hasn't eliminated my pain. So, I've learned to sort of just stay on my back. I can't sleep on my side anymore. You know, most people, you kind of move throughout the night and I just can't do that."

Impact on Mood

The following provides a description of the video of Owen describing the impact of his pain on his mood:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"The pain has definitely affected my mood. I can't remember the last time I was sort of pain free. When you live that way, you just, I don't know, I feel just kind of grumpy all the time. I don't want to be," Owen says. "I don't want to be that person," he emphasizes. "It's depressing. On top of everything, I have this, I don't want to call it anxiety, I feel silly saying, 'Oh, I have anxiety,' but yeah, I'm just not happy. I can't remember the last time I was really happy."

Impact on Activity

The following provides a description of the video of Owen describing the impact of his pain on his activities:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"My back pain has basically stopped me from being active. Not that I was all that active to begin with, but I can't run. When I run, I can really feel it. I can bike a little bit. Biking somehow is a little better than running. But I find that even if I want to be active, the pain eliminates that possibility for me."

Missed Work

The following provides a description of the video of Owen describing how his pain made him miss work:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"I have missed a few days of work here and there. My boss is nice, and there are some things I can do from home. But there are some days where I have not been able to make it in. And they're pretty understanding about that. A lot of times it's fairly sedentary, you know, you sit all day. So, once I get myself settled, I'm usually okay for a while, so I haven't missed too much work, let's just say that."

Med Storage

The following provides a description of the video of Owen describing how he stores his medications:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a dark blue button up shirt. He faces the camera at a slightly offset angle.

"I store my meds in the bathroom. I have a pretty good-sized bathroom storage area. My kids are old enough that I don't worry about them getting into my prescriptions. They know if they did, there'd be a pretty heavy price to pay."

Review Owen's Chart

History of Present Illness

Name: Owen Jones

Age: 47

Address: 846 Heavenly Ln, St. Louis, MO 63114

ALL: NKDA

Ins: BC/BS of MO

Summary:

Mr. Jones presents for follow-up of low back pain with intermittent radicular symptoms and numbness which started around 2 years ago following a lifting related injury. He describes the pain as "sharp, pinching, and sore." He reports greater disability from the localized lumbar pain versus the radicular pain. He rates his pain now as a 4-5/10 with the worse pain in the AM with gradual reduction throughout the day depending on activity. He has trialed chiropractic, physical therapy, and injections with varying efficacy. Currently he is medically managed with an NSAID and opioids.

Past Medical History

1. Hypertension
2. Obstructive sleep apnea treated with CPAP
3. GERD
4. Chronic low back pain with intermittent radiculopathy

Medications

1. Lisinopril 10 mg PO QAM
2. Escitalopram 20 mg PO QHS
3. CR oxycodone 40 mg PO Q12 hours
4. IR oxycodone 5 mg PO Q6 hours PRN
5. Celecoxib 200 mg PO Q12 hours
6. Lansoprazole 30 mg PO QAM
7. Sennosides 8.6 mg / docusate 50 mg QAM

Review of Systems

Denies acute visual changes, dizziness, confusion, memory loss, loss of consciousness; denies chest pain, shortness of breath, or heart palpitations; denies nausea and vomiting, does endorse mild constipation which he self-treats; denies suicidal or homicidal ideation. Denies urinary or fecal incontinence or urinary retention. Does endorse problems achieving and maintaining erection. Denies saddle anesthesia.

Physical Exam, Vitals, Labs, Tests

Vitals

BP: 132/84

HR: 98

RR: 16

Temp: 98°F

Ht: 71 in

Wt: 114.5 kg

Physical Exam

A & O 3, affect and speech appropriate; NAD PERLLA; mildly fatigued, no impairment of speech, cognition, or memory; no sweating, chills, or flushing; no edema or cyanosis; lungs CTA; decreased bowel sounds X 4 quadrants

Labs

Hgb 12; Bct 34; RBC 5.2; WBC 12; Plt 225; NA 139; K 4.7; Cl 101; CO_2 21; BUN 12; SCr 1.0; Glu 89

Test/Imaging

L-spine MRI (around 16 months ago) significant for mild neuroforaminal narrowing bilaterally at L5/S1 secondary to broad based posterior disc bulge; mild multi-level facet arthropathy; PHQ9: 18

Test Your Knowledge: Assess Owen's Risk

Using the Opioid Risk Tool (ORT), identify Owen's risk of future opioid abuse.

1) Low risk for opioid abuse (score of less than or equal to 3)
2) Moderate risk for opioid abuse (score of 4 to 7)
3) High risk for opioid abuse (score of greater than or equal to 8)

Make a Plan for Owen

Test Your Knowledge: Rehabilitation

Physical therapy is not recommended because activity increases the patient's pain.

Yes No

Initiate PT with focus on mechanical factors, deconditioning, and education.

Yes No

Refer the patient to his physician for a second round of imaging prior to PT.

Yes No

Instruct the patient on a 60-minute home strength/flexibility conditioning program.

Yes No

Instruct the patient in how to perform daily tasks using optimal low back postures.

Yes No

Include the patient's spouse as part of the initial physical therapy assessment.

Yes No

Provide instruction for maintaining body alignment/support when sleeping.

Yes No

Test Your Knowledge: Pharmacotherapy

Increase CR oxycodone to 80 mg PO Q12 hours.

Yes No

Reduce CR oxycodone to 30 mg PO Q12 hours.

Yes No

Increase escitalopram to 40 mg PO QAM.

Yes No

Change escitalopram to duloxetine 30 mg PO QHS.

Yes No

Change CR oxycodone to methadone, continue current IR oxycodone.

Yes No

Do not consume alcohol while taking opioids.

Yes No

Retrial gabapentin starting with therapeutic doses of 300 mg Q8 hours.

Yes No

Test Your Knowledge: Behavioral Therapy

Postpone psychological counseling until medication regimen is stabilized.

Yes No

Initiate outpatient psychological counseling with sessions on a routine basis.

Yes No

Include the patient's spouse in part of the initial assessment session.

Yes No

Focus on family-of-origin history to identify factors leading to substance misuse.

Yes No

Provide educational materials that describe self-management approaches to coping.

Yes No

Encourage a leave-of-absence from work to pursue inpatient sub abuse treatment.

Yes No

Provide instruction in relaxation training or self-hypnosis.

Yes No

Test Your Knowledge: Risk Reducation

Co-prescribe two doses of naloxone.

Yes No

Educate patient to purchase lock box for opioid analgesic storage.

Yes No

Admit Owen for inpatient opioid detoxification.

Yes No

Review pain treatment agreement and stress avoidance of outside prescribers.

Yes No

Perform urine drug screening.

Yes No

Begin wean of current opioid analgesics.

Yes No

Check state prescription drug monitoring program.

Yes No

Follow-up

Owen presents to your clinic following a recent trip to the emergency department. The following describes a video of Owen discussing what happened:

Owen's head and shoulders can be seen in the shot. He's wearing glasses and a teal polo shirt. He faces the camera at a slightly offset angle.

"So, I've had a pretty interesting couple of weeks. I went to the dentist to have some dental work done, and he prescribed some pain medication, which of course I took. I also kept my regular regimen of my medications from you going. Just at one point, I started feeling really tired and lethargic and sleepy, and the next thing I knew, I was out. My wife had to call 911, and I just woke up in the hospital."

"I have to be honest, I was, and still am, a little shaken by this whole thing. I don't know what happened to me and I'm not sure what I should do. I mean, obviously if I don't take my regular medications, my back pain is not going to go away. I'm not sure what I should do, to be honest."

Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD)

The Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD) is a tool with separate validated screens for use in veteran and civilian patient populations. Use the tool to assess Owen's risk for overdose or serious respiratory depression by answering the questions below:

In the past 6 months, has Owen had a health care visit (outpatient, inpatient, or emergency department) involving:

Substance use disorder (abuse or dependence)?

Yes No

Bipolar disorder or schizophrenia?

Yes No

Stroke or cerebrovascular disease?

Yes No

Clinically significant renal impairment?

Yes No

Heart failure?

Yes No

Non-malignant pancreatic disease?

Yes No

Chronic pulmonary disease?

Yes No

Recurrent headache?

Yes No

Does Owen consume any of the following?

Fentanyl?

Yes No

Morphine?

Yes No

Methadone?

Yes No

Hydromorphone?

Yes No

Extended-release or long-acting opioid?

Yes No

Benzodiazepine?

Yes No

Prescription antidepressant?

Yes No

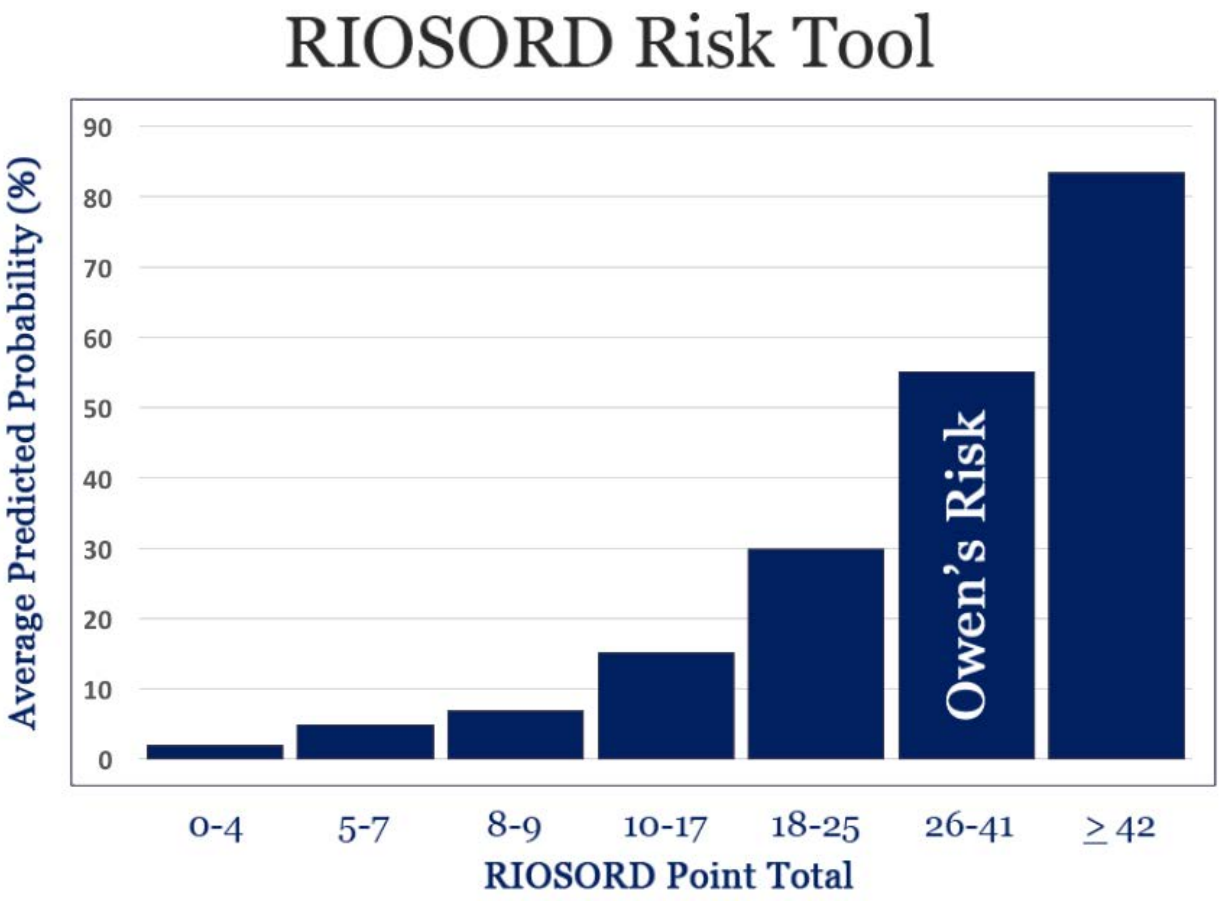
Greater than or equal to 100 mg of oral morphine equivalents daily?

Yes No

What's Owen's overall RIOSORD score?

1) 0-4
2) 5-7
3) 8-9
4) 10-17
5) 18-25
6) 26-41
7) Greater than or equal to 42

[4]RIOSARD Risk Tool



Owen scored 38 points on the civilian RIOSORD tool. His predicted probability of experiencing serious opioid-induced respiratory depression or overdose is around 55%, as pictured above.

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[4] Zedler, BK, et al. *Pain Med* 2018;19:68-78.

Selecting a Naloxone Product for Owen

Intranasal

Naloxone nasal spray would make a reasonable choice for Owen.

- Insurance coverage may be a barrier
- Approximately $75 for 2 doses
- Easy to use
- One pack comes with two doses
- Educate that applicator should be placed into a nostril deep enough for fingers to touch patient's nose
- Additional information on administration of nasal naloxone may be found here.

Intramuscular

Naloxone for intramuscular (IM) injection would make a reasonable choice for Owen:

- IM naloxone is cost-effective and generally covered by most private and Medicaid payers
- Average cost for 0.4 mg / mL 1 mL vial is $20
- IM naloxone requires education of the patient and potential care-givers, friends, and family
- IM naloxone is available in pre-filled syringes

Auto-injector

Naloxone auto-injector (Evzio) is a reasonable choice for Owen:

- Naloxone auto-injector (AI) is simple and easy to use
- Voice prompts direct the user step by step
- Naloxone AI may be administered directly through thin layers of clothing
- Naloxone AI is provided in box with two live 2mg auto-injectors and one trainer
- Insurance coverage may be significant barrier (estimate cost of $2,400 for each AI unit)

Nasal Atomizer

Naloxone nasal atomizer would not be a reasonable choice for Owen:

- Lacks FDA approval
- Requires multiple steps to assemble
- Cost for pre-filled cartridge and nasal atomizer approximately $50
- Insurance coverage may be barrier to use

Test Your Knowledge: When to Administer Naloxone

Slow breathing (less than 8 breaths /minute) does not require naloxone administration.

Yes No

Naloxone may be administered through clothing if necessary.

Yes No

Place Owen on his back in the recovery position after naloxone administration.

Yes No

Administer first dose of naloxone and then contact 911 / emergency services

Yes No

If patient responds to first naloxone dose, no further follow-up is necessary.

Yes No

Always provide two doses of naloxone when co-prescribing.

Yes No

Consider administration of second dose of naloxone following 3 minutes if no response.

Yes No

Answer Key

Test Your Knowledge: Assess Owen's Risk

Using the Opioid Risk Tool (ORT), identify Owen's risk of future opioid abuse.

1) Low risk for opioid abuse (score of less than or equal to 3) *(incorrect)*
2) Moderate risk for opioid abuse (score of 4 to 7) *(correct)*
3) High risk for opioid abuse (score of greater than or equal to 8) *(incorrect)*

Test Your Knowledge: Rehabilitation

Physical therapy is not recommended because activity increases the patient's pain.

Yes *(incorrect)*

No *(correct: A comprehensive physical therapy approach, targeting multidimensional drivers of pain/disability and promoting increased activity, may reduce dependence on opioids, ETOH, and other substance-related approaches to treatment of pain and other symptoms.*

Initiate PT with focus on mechanical factors, deconditioning, and education.

Yes *(correct: The patient has signs and symptoms that change with body positions and movement, suggesting a mechanical component to his pain which should be addressed. The patient's general inactive state likely contributes to his low tolerance for activity and pain. He may think that any movement that increases his symptoms is causing tissue damage (kinesiophobia), and thus may be avoiding movement altogether.)*

No *(incorrect)*

Refer the patient to his physician for a second round of imaging prior to PT.

Yes (incorrect)

No *(correct: The patient's history and presentation does not suggest that repeated imaging would be helpful. The initial findings of a posterior disc bulge and facet arthropathy are common finding in someone of his age and BMI, and often are not correlated with symptoms.)*

Instruct the patient on a 60-minute home strength/flexibility conditioning program.

Yes *(incorrect)*

No *(correct: The patient has low motivation to exercise and likely will not adhere to such an extensive routine. Non-adherence would likely negatively impact his self-esteem.)*

Instruct the patient in how to perform daily tasks using optimal low back postures.

Yes *(correct: Focusing on returning to meaningful activities instead of on symptom behavior will help the patient play a more active role in his treatment.)*

No *(incorrect)*

Include the patient's spouse as part of the initial physical therapy assessment.

Yes *(correct: It will be important for the patient to have social support and encouragement to increase activity and decrease the focus on symptom behavior.)*

No *(incorrect)*

Provide instruction for maintaining body alignment/support when sleeping.

Yes *(correct: The patient has a history of sleep apnea and mentions that he sleeps in a "rigid" position because of pain. Disrupted sleep is a known comorbidity that negatively influences LBP outcomes. Use of pillows/supports to properly align the spine and hips may decrease the frequency of sleep disturbances.)*

No *(incorrect)*

Test Your Knowledge: Pharmacotherapy

Increase CR oxycodone to 80 mg PO Q12 hours.

Yes *(incorrect)*

No *(correct: Owen is currently at increased risk for opioid overdose given a morphine equivalent daily dose of greater than or equal to 90 mg and concurrent alcohol use. Opioid therapy for nonspecific chronic low back pain should be reserved for patients that have failed all other non-pharmacologic and non-opioid analgesic modalities.)*

Reduce CR oxycodone to 30 mg PO Q12 hours.

Yes *(correct: A wean trial for Owen may be appropriate, especially if other adjuvant analgesic and non-pharmacologic modalities are to be attempted. Dose reductions of 10% to 20% are generally well tolerated by patients.)*

No *(incorrect)*

Increase escitalopram to 40 mg PO QAM.

Yes *(incorrect)*

No *(correct: Escitalopram, a selective serotonin reuptake inhibitor, is effective for depression and anxiety; however, this medication class is not effect for either acute or chronic musculoskeletal or neuropathic pain syndromes. Additionally, 40 mg of escitalopram is higher than maximum recommended daily doses.)*

Change escitalopram to duloxetine 30 mg PO QHS.

Yes *(correct: Duloxetine, a serotonin-norepinephrine reuptake inhibitor, is effective for depression, anxiety, and several chronic pain syndromes. This medication may be more appropriate for a trial as an adjuvant analgesic than selective serotonin reuptake inhibitors. Reducing the escitalopram to 10mg daily and initiating duloxetine at 30 mg with several days of overlap will prevent serotonin withdrawal syndrome.)*

No *(incorrect)*

Change CR oxycodone to methadone, continue current IR oxycodone.

Yes *(incorrect)*

No *(correct: Methadone, an effective opioid analgesic, would not be recommended for Owen given its difficult titration, unpredictable half-life, and risk of opioid overdose with Owen's current alcohol intake.)*

Do not consume alcohol while taking opioids.

Yes *(correct: Opioids should never be taken concurrently with alcohol due to the additive central nervous system depressant effects. Additionally, alcohol may interfere with the extended-release mechanism of several opioid formulations, resulting in dose dumping and potential overdose.)*

No *(incorrect)*

Retrial gabapentin starting with therapeutic doses of 300 mg Q8 hours.

Yes *(incorrect)*

No *(correct: Given Owen's history of opioid overdose, alcohol consumption, and risk factors, increasing the opioid dose at this point in his care would likely not be prudent.)*

Test Your Knowledge: Behavioral Therapy

Postpone psychological counseling until medication regimen is stabilized.

Yes *(incorrect)*

No *(correct: Psychological counseling is likely to be instrumental in reducing dependence on opioids, alcohol, and other substance-related approaches.)*

Initiate outpatient psychological counseling with sessions on a routine basis.

Yes *(correct: Regular sessions are preferred to need-based (i.e., irregular) sessions because a primary focus is likely to be educational and coaching, approaches that work best if they are not in response to some urgent clinical need.)*

No *(incorrect)*

Include the patient's spouse in part of the initial assessment session.

Yes *(correct: The patient has referenced some marital dysfunction in his interview, and it often is very informative to have the perspective of a significant other when undertaking a behavioral assessment.)*

No *(incorrect)*

Focus on family-of-origin history to identify factors leading to substance misuse.

Yes *(incorrect)*

No *(correct: The patient provided little evidence implicating his family of origin as a factor contributing to substance misuse, while he demonstrates substantial indicators in his own history (e.g., his level of daily (ETOH) of greater immediate importance).)*

Provide educational materials that describe self-management approaches to coping.

Yes *(correct: Much of chronic pain (or any chronic disease) management relies on active patient involvement, and providing educational materials will not only contribute useful content regarding coping skills, but also give an opportunity to examine how the patient is implementing such skills in his daily activities.)*

No *(incorrect)*

Encourage a leave-of-absence from work to pursue inpatient sub abuse treatment.

Yes *(incorrect)*

No *(correct: Inpatient treatment is not indicated at this time, and it is important to provide counseling that assists a patient to remain as functional as possible as he learns to cope more effectively with pain, without resorting to the use of substances as a primary means of coping.)*

Provide instruction in relaxation training or self-hypnosis.

Yes *(correct: Relaxation training is a useful skill in reducing pain with a myofascial component, and the applied skills often can serve as a behavioral "reset switch," giving the patient a few moments to assess his status several times/day.)*

No *(incorrect)*

Test Your Knowledge: Risk Reduction

Co-prescribe two doses of naloxone.

Yes *(correct: When prescribing or dispensing naloxone, two doses should always be provided. The auto-injector and nasal naloxone product both come with two doses in each box. If providing parenteral single dose naloxone vials, two doses (and two syringes) should always be provided.)*

No *(incorrect)*

Educate patient to purchase lock box for opioid analgesic storage.

Yes *(correct: Survey data suggests that a significant amount of opioid diversion arises from theft of opioids from friends or family. All patients should be educated to store their opioids in a locked box or cabinet.)*

No *(incorrect)*

Admit Owen for inpatient opioid detoxification.

Yes *(incorrect)*

No *(correct: While Owen may potentially meet the DSM-V diagnostic criteria for mild opioid use disorder, abrupt inpatient detoxification is not warranted. A discussion with the patient regarding provider concerns and possible wean trial would be a reasonable course of action in this particular case.)*

Review pain treatment agreement and stress avoidance of outside prescribers.

Yes *(correct: As an essential component of risk mitigation, opioid or pain agreements provide an opportunity to spell out clear expectations for both the patient and the provider. Additionally, these documents can be used as an informed consent outlining the harms and benefits of opioid therapy. They should not be used as a punitive tool.)*

No *(incorrect)*

Perform urine drug screening.

Yes *(correct: Random drug screening is a vital component of opioid risk mitigation in an effort to recognize potential misuse, abuse, or diversion. Medical decision making following an unexpected urine drug screen result should be reserved until confirmatory testing can be performed.)*

No *(incorrect)*

Begin wean of current opioid analgesics.

Yes *(correct: Owen's daily dose of extended-release and immediate-release oxycodone places him at an increased risk for opioid-associated disordered breathing as well as overdose. A wean trial would be a reasonable component of Owen's risk reduction plan.)*

No *(incorrect)*

Check state prescription drug monitoring program.

Yes *(correct: State prescription drug monitoring programs are valuable resources to both identify potential drug seeking behavior and unhealthy patient relationships with their opioid analgesics. Additionally, these programs can provide prescribers and dispensers reassurance that patients with chronic pain are adherent to the medical plan.)*

No *(incorrect)*

Test Your Knowledge: When to Administer Naloxone

Slow breathing (less than 8 breaths /minute) does not require naloxone administration.

Yes *(incorrect)*

No *(correct: Slow breathing (less than 8 breaths/minute), blue lips or fingertips, limp body, or choking, gurgling and snoring noise may all be indicative of opioid overdose. Additionally, patients unresponsive to yelling their name or sternal rub may be in opioid overdose. Administration of naloxone is warranted.)*

Naloxone may be administered through clothing if necessary.

Yes *(correct: Naloxone may be administered through clothing if the length of the needle and the thickness of clothing allows. The auto-injector may also be administered through clothing.)*

No *(incorrect)*

Place Owen on his back in the recovery position after naloxone administration.

Yes *(incorrect)*

No *(correct: The recovery position involves the overdose patient being placed on his or her side, not on their back.)*

Administer first dose of naloxone and then contact 911 / emergency services

Yes *(correct: This is true. Always instruct the person who will be administering the naloxone to an overdose patient to always contact emergency services following the first administration.)*

No *(incorrect)*

If patient responds to first naloxone dose, no further follow-up is necessary.

Yes *(incorrect)*

No *(correct: Always stay with a patient following administration of naloxone for opioid overdose until emergency medical services arrive.)*

Always provide two doses of naloxone when co-prescribing.

Yes *(correct: This is true. When prescribing the nasal naloxone, 2 doses of 4mg naloxone nasal applicators will be provided. When prescribing naloxone auto-injector, 2 doses of 2mg injectors and a demonstration device will be provided. Co-prescribing intramuscular naloxone requires delineating a quantity of two 0.4mg/mL 1mL vials with syringes.)*

No *(incorrect)*

Consider administration of second dose of naloxone following 3 minutes if no response.

Yes *(correct: Some opioid overdose patients may require a second dose of naloxone if no response after three minutes. Remember that the effects of naloxone may wear off before the drug ingested causing the overdose wears off.)*

No *(incorrect)*

Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD)

The Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD) is a tool with separate validated screens for use in veteran and civilian patient populations. Below, you'll find the answers to Owen's risk for overdose or serious respiratory depression.

In the past 6 months, has Owen had a health care visit (outpatient, inpatient, or emergency department) involving:

Substance use disorder (abuse or dependence)?

Yes *(correct. +25 points)*

No *(incorrect)*

Bipolar disorder or schizophrenia?

Yes *(incorrect for Owen's case. Otherwise would have added +10 points)*

No *(correct. +0 points)*

Stroke or cerebrovascular disease?

Yes *(incorrect for Owen's case. Otherwise would have added +8 points)*

No *(correct. +0 points)*

Clinically significant renal impairment?

Yes *(incorrect for Owen's case. Otherwise would have added +8 points)*

No *(correct. +0 points)*

Heart failure?

Yes *(incorrect for Owen's case. Otherwise would have added +7 points)*

No *(correct. +0 points)*

Non-malignant pancreatic disease?

Yes *(incorrect for Owen's case. Otherwise would have added +7 points)*

No *(correct. +0 points)*

Chronic pulmonary disease?

Yes *(incorrect for Owen's case. Otherwise would have added +5 points)*

No *(correct. +0 points)*

Recurrent headache?

Yes *(incorrect for Owen's case. Otherwise would have added +5 points)*

No *(correct. +0 points)*

Does Owen consume any of the following?

Fentanyl?

Yes *(incorrect for Owen's case. Otherwise would have added +3 points)*

No *(correct. +0 points)*

Morphine?

Yes *(incorrect for Owen's case. Otherwise would have added +11 points)*

No *(correct. +0 points)*

Methadone?

Yes *(incorrect for Owen's case. Otherwise would have added +11 points)*

No *(correct. +0 points)*

Hydromorphone?

Yes *(incorrect for Owen's case. Otherwise would have added +7 points)*

No *(correct. +0 points)*

Extended-release or long-acting opioid?

Yes *(correct. Add +5 points.)*

No *(incorrect)*

Benzodiazepine?

Yes *(incorrect for Owen's case. Otherwise would have added +9 points)*

No *(correct. +0 points)*

Prescription antidepressant?

Yes *(correct. Add +8 points.)*

No *(incorrect)*

Greater than or equal to 100 mg of oral morphine equivalents daily?

Yes *(incorrect for Owen's case. Otherwise would have added +7 points)*

No *(correct. +0 points)*

What's Owen's overall RIOSORD score?

1) 0-4 *(incorrect)*
2) 5-7 *(incorrect)*
3) 8-9 *(incorrect)*
4) 10-17 *(incorrect)*
5) 18-25 *(incorrect)*
6) 26-41 *(correct)*
7) Greater than or equal to 42 *(incorrect)*

Additional Learning Resources

Websites

American College of Physicians safe opioid prescribing REMS program

Centers for Disease Control Opioid Overdose and Safe Prescribing

Harm Reduction Coalition naloxone initiative

National Institutes of Health Pain Consortium

Practical Pain Management online opioid conversion calculator

Prescribe to Prevent Naloxone resource website

Providers Clinical Support System

Substance Abuse and Mental Health Services safe opioid prescribing

Veteran's Affairs Opioid Safety Initiative

Publications

American College of Physicians Clinical Practice Guideline for Low Back Pain

Qasseem A, Wilt TJ, McLean RM, Forciea MA. Noninvasive treatment for acute, subacute, and chronic low back pain: A clinical practice guideline from the American College of Physicians.

Centers for Disease Control Guideline for Prescribing Opioids for Chronic Pain

Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain -United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1-49. DOI: http://dx.doi.org/10.15585/mmwr.rr6501e1.

RIOSORD Validation Study for Opioid Overdose Risk in a Civilian Population

Zedler BK, Saunders WB, Joyce AR, Vick CC, Murrelle EL. Validation of a screening risk index for serious prescription opioid-induced respiratory depression or overdose in a US commercial health plan claims database. *Pain Med* 2018;19(1):68-78. doi:10.1093/pm/pnx099.

RIOSORD Validation Study for Opioid Overdose Risk in a Veteran's Health Administration Population

Zedler B, Xie L, Joyce A, Brigham J, et al. Development of a risk index for serious prescription opioid-induced respiratory depression or overdose in veterans' health administration patients. *Pain Med* 2015;16(8):1566-1579. doi:10.1111.pme.127777.

Veteran's Affairs Opioid Overdose and Naloxone Distribution Program

Oliva EM, Christopher MLD, Wells D, Bounthavong M, Havery M, et al. Opioid overdose education and naloxone distribution: Development of the Veterans Health Administration's national program. *J Am Pharm Assoc* 2017;57(2S):S168-S179.e4. doi:10.1016/j.japh.2017.01.022.

Organizations

Academy of Integrative Pain Management

American Academy of Addiction Psychiatry

American Academy of Pain Medicine

American Chronic Pain Association

American Pain Society

American Society of Addiction Medicine

American Society of Pain Management Nursing

International Association for the Study of Pain

National Institutes of Health Pain Consortium

Society of Palliative Care Pharmacists