

A quick guide to the Clinical Opiate Withdrawal Scale

By Dorothy J. Moore, DNP, CCRN, FNP-C

Jake is a 27-year-old I.V. heroin user seeking care in your ED for a painful 3-cm abscess in his right forearm that requires incision and drainage. The area surrounding the abscess is red and warm to the touch. Your ED is packed, and you know it may be a couple of hours before Jake gets treatment. So, how do you successfully monitor this patient? You're watching his vital signs, but he says he feels awful, he hurts everywhere, and he's going to leave if he has to wait much longer. Jake is a frequent patient in your ED, and he has a history of getting impatient and anxious before leaving against medical advice.

The answer is to use the Clinical Opiate Withdrawal Scale (COWS)—a validated 11-item tool that's integrated into many electronic medical records and even available as a smartphone app.

Introducing COWS

Patients who are opioid-dependent may leave the hospital before receiving the care they need because they're going into

withdrawal and fear that their symptoms won't be treated. Other times, patients are in active withdrawal and the problem isn't correctly identified or systematically assessed. The COWS has become the standard tool in addiction treatment for measuring a patient's withdrawal level while transitioning them to buprenorphine from illicit opioids. It's also used while caring for a patient who's medically detoxifying from opioids. Using the COWS will help you accurately assess early signs of withdrawal and track degrees of withdrawal. It also provides a common language for communicating with other healthcare team members as you advocate and care for your patient.

The clinician adds up a patient's COWS score from the following 11 items to determine the severity of opioid withdrawal:

- resting pulse rate
- sweating
- restlessness
- pupil size
- bone or joint aches
- runny nose or tearing
- gastrointestinal (GI) upset
- tremor
- yawning
- anxiety or irritability
- gooseflesh skin.

The scoring is based on the half-hour period during the patient exam, and the clinician circles the response that best describes the patient's signs and symptoms (see *Scoring the COWS*). For instance, if a patient ran 5 miles just before your assessment, an increased pulse rate and sweating wouldn't add to the score. COWS scores can range from 0 to 48. A score of 5 to 12 is considered mild withdrawal; moderate, 13 to 24; moderately severe, 25 to 36; and



Scoring the COWS

| Symptom | Scoring criteria |
|--|---|
| Resting pulse rate (measured after the patient is sitting or lying down for 1 minute) | 0: 80 beats/minute or below 1: 81 to 100 beats/minute 2: 101 to 120 beats/minute 4: Greater than 120 beats/minute |
| Sweating (over the past half hour, without accounting for room temperature or patient activity) | 0: No report of chills or flushing 1: One subjective report of chills or flushing 2: Flushed or observable moistness on face 3: Beads of sweat on brow or face 4: Sweat streaming off face |
| Restlessness (observation during assessment) | 0: Able to sit still 1: Reports difficulty sitting still, but is able to do so 3: Frequent shifting or extraneous movements of legs/arms 5: Unable to sit still for more than a few seconds |
| Pupil size | 0: Pupils pinned or normal size for room light 1: Pupils possibly larger than normal for room light 2: Pupils moderately dilated 5: Pupils so dilated that only the rim of the iris is visible |
| Bone or joint aches (If the patient was having pains previously, only the additional component attributed to opioid withdrawal is scored.) | 0: Not present 1: Mild, diffuse discomfort 2: Reports severe diffuse aching of joints/muscles 4: Rubbing joints or muscles and unable to sit still because of discomfort |
| Runny nose or tearing (not accounted for by cold symptoms or allergies) | 0: Not present 1: Nasal stuffiness or unusually moist eyes 2: Nose running or tearing 4: Nose constantly running or tears streaming down cheeks |
| GI upset (over the past half hour) | 0: No GI symptoms 1: Stomach cramps 2: Nausea or loose stools 3: Vomiting or diarrhea 5: Multiple episodes of diarrhea or vomiting |
| Tremors (observation of outstretched hands) | 0: No tremor 1: Tremor can be felt, but not observed 2: Slight observable tremor 4: Gross tremor or muscle twitching |
| Yawning (observation during assessment) | 0: No yawning 1: Yawning once or twice during assessment 2: Yawning three or more times during assessment 4: Yawning several times per minute |
| Anxiety or irritability | 0: None 1: Reports increasing irritability or anxiousness 2: Obviously irritable or anxious 4: So irritable or anxious that participation in the assessment is difficult |
| Gooseflesh skin | 0: Skin is smooth 3: Piloerection of skin can be felt or hairs standing up on arms 5: Prominent piloerection |

Total score: 5 to 12 = mild withdrawal, 13 to 24 = moderate, 25 to 36 = moderately severe, more than 36 = severe withdrawal

Source: Wesson DR, Ling W. The clinical opiate withdrawal scale (COWS). *J Psychoactive Drugs*. 2003;35(2):253-259.

severe, greater than 36. To use the COWS as a guide, consider assessing the patient with a score of less than 12 every 6 hours, and then hourly as withdrawal progresses.

Pathophysiology of opioid withdrawal

An understanding of the pathophysiology of opioid withdrawal is helpful when using the COWS with your patients. Opioid withdrawal revolves around symptoms of autonomic nervous system (ANS) hyperactivity. Although opioid receptors (delta, kappa, and mu) are mainly located in the brain, they can be found throughout the ANS in areas associated with pain and even in the GI tract. Opioid reception is highest in an area of the brain called the locus coeruleus. Located in the pons of the brainstem, this area is key to basic physiologic responses to stress and panic. This is where the brain synthesizes norepinephrine, the sympathetic nervous system's neurotransmitter responsible for the body's fight-or-flight response.

Prolonged or intense exposure to opioids inhibits neuronal firing in the locus coeruleus, causing symptoms ranging from a sense of relaxation to lethal respiratory depression. After repeated exposure to opioids over time, the body creates more neural receptors in an attempt to achieve homeostasis. As opioids are withdrawn from opioid receptors, a surge of norepinephrine is released into the body, affecting all major organ systems and causing withdrawal symptoms, which begin with anxiousness and a racing heartbeat.

Experiencing opioid withdrawal

How a patient experiences withdrawal depends on several factors, including the type of opioid used, delivery method, amount taken each time, and length of use. Other factors include how many times the patient has been through withdrawal (past history can heighten anxiety), as well as mental health history and genetic predisposition.

Early in withdrawal, the patient will begin to crave opioids and may experience

panic, agitation, and difficulty sleeping. Next, the patient will have muscle aches, yawning, sweating (diaphoresis), increased tearing (lacrimation), and a runny nose (rhinorrhea). As withdrawal progresses, pupils get larger (mydriasis), the heart rate continues to increase, and abdominal cramping begins, along with gooseflesh skin (piloerection) and chills. GI upset worsens with prolonged withdrawal, leading to nausea, diarrhea, and vomiting.

Because heroin is a short-acting opioid, withdrawal begins as early as 4 hours after the last dose, typically peaks within 2 to 3 days, and diminishes over 3 to 5 days. Morphine and oxycodone also have relatively short half-lives. Methadone and extended-release opioids have a half-life of 16 to 60 hours, so it can take up to 1 day for a patient to feel withdrawal symptoms and about 10 days for symptoms to resolve. Many patients feel depressed and crave the drug for weeks after active withdrawal ends.

Unlike alcohol or benzodiazepine withdrawal, opioid withdrawal doesn't cause seizures or altered mental status, and it doesn't cause a fever. Therefore, opioid withdrawal isn't described as being fatal. However, deaths have been associated with opioid withdrawal, especially in older patients or those with preexisting conditions such as kidney disease. This is because patients withdrawing from an opioid can become dangerously dehydrated. Withdrawal in pregnant women also poses a high risk to the unborn child. It's believed that opioid withdrawal while pregnant may harm placenta function. It may also induce preterm labor or cause fetal convulsions, or even fetal demise.

Depending on the setting, most withdrawal management focuses on symptom control. Patients may be transitioned to other opioids, most notably buprenorphine or methadone, to relieve withdrawal symptoms and begin medication-assisted treatment (MAT). Patients are hydrated with 0.9% sodium chloride or sodium lactate

solution and given analgesics such as I.V. ibuprofen for pain control, antiemetics, and antianxiety medication if needed.

Back to your patient

Armed with knowledge about COWS, you assess Jake. He tells you that it's been 8 hours since he last used heroin. He's starting to feel anxious, and he's irritated when you ask him how he's doing (COWS score 2 for anxiety or irritability). The rest of his symptoms are as follows:

- His resting pulse is 88 (COWS score 1).
- He says that he feels somewhat chilly (COWS score 1).
- He's staying on the gurney but says that if he can't get up soon and go have a cigarette, he's going to be really upset (COWS score 1).
- His pupils are beginning to look slightly larger than normal (COWS score 1).
- His entire body aches, and he says that he feels like he's getting the flu (COWS score 2).
- His nose is stuffy (COWS score 1).
- He says that he's having stomach cramps (COWS score 1).
- You can see a slight tremor in his outstretched hands (COWS score 2).
- He yawns twice during the assessment (COWS score 1).
- He has no goosebumps (COWS score 0).

Jake's total COWS score is 13, which puts him at the beginning of moderate withdrawal. You report this information to Jake's health-care provider, who orders I.V. acetaminophen, ondansetron, and lorazepam 2 mg. Jake is also started on buprenorphine for opioid replacement therapy. Thirty minutes later, Jake says that he's feeling better and indicates he'll stay for the incision and drainage of his wound. At your request, a social worker visits Jake and offers him outpatient MAT and counseling, to which he agrees.

A drug-free future

Opioid use disorder is a chronic, often relapsing condition. With proper assessment of withdrawal using the COWS to help treat patients with respect and reduce stigma and prompt referral to MAT,

patients stand a good chance of doing well on the road to recovery. ■

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