



Use and interpretation of the COWS – Clinical Opiate Withdrawal Scale

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UNDER THE STEWARDSHIP OF MARY AIKENHEAD MINISTRIES

Introduction





- Background
- History
- Interobserver agreement
- Confounding factors

Opioid Withdrawal





Withdrawal intensity

- 1) Severity of physical dependence
- 2) Relative occupancy of mu opiate receptor at a point in time



Withdrawal Scales





Initially developed and used in research

To:

Compare efficacy of treatments for withdrawal

Assess degree of physical dependence before induction

Assess physiological patients' readiness for induction (e.g. buprenorphine)

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs. 2003 Apr.-Jun;35(2):253-9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.





Himmelsbach Scale (1941)

First
rating
scale

TABLE 1 Himmelsbach's Point System for Measuring Opioid Abstin (Himmelsbach 19		irome Inter	nsity by the	Day or Hou
	By Day (D)			our (H)
Sign or Symptom	Points	Limit	Points	Limit
Yawning	1	1	1	1
Lacrimation	1	1	1	1
Rhinorrhea	1	1	1	1
Perspiration	1	1	1	1
Mydriasis	3	3	3	3
Fremor	3	3	3	3
Gooseflesh	3	3	3	3
Anorexia (40% decrease in caloric intake)	3	3	_	_
Restlessness	5	5	5	5
Emesis (each spell)	5	***	5	5
ever (for each 0.1° C. rise over mean addiction level)	1	_	1	10
Hyperpnea (for each resp./min rise over mean addiction level)	1	_	1	10
Rise in a.m. systolic B.P. (for each 2 mm. Hg over mean addiction level)	1	1.5	1	10
Weight loss (a.m.) (for each lb. from last day of addiction)	1	_	_	

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs. 2003 Apr-Jun;35(2):25: 9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.

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Evolution of measuring opiate withdrawal





1960s

1: Opiate Withdrawal Subjective Experience Scale (OPW)

1970s (Advent of methadone maintenance treatment)

- 1: Strong Opiate Withdrawal Scale high levels of physical dependence
- 2: Weak Opiate Withdrawal Scale measuring less intense withdrawal symptoms

1980s (move to more sensitive and validated instruments)

- 1: Opiate Withdrawal Scale
- 2: Subjective Opiate Withdrawal Scale
- 3: Objective Opiate Withdrawal Scale

1990s

- 1: Short Opiate Withdrawal Scale shortened version of the Opiate Withdrawal Scale
- 2: Short Opiate Withdrawal Questionnaire measure before and after withdrawal. Only one above not based on the Himmelsbach Scale, included mood

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs. 2003 Apr-Jun;35(2):25

age 6

1980s



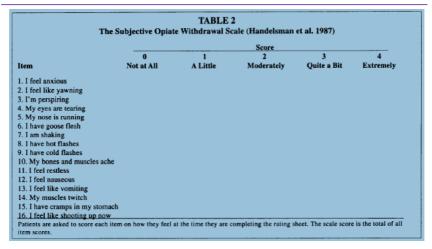
Attempts to separate subjective and objective measures

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS), J Psychoactive Drugs. 2003 Apr.-Jun;35(2):253-9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.

Subjective







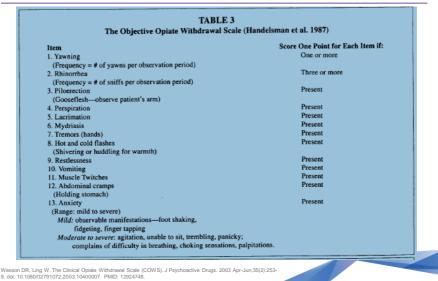
Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS), J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.

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Objective



The Clinical Opiate Withdrawal Scale (COWS)





First published in a training manual for Buprenorphine Treatment (1999)

Items included were validated in previous assessment instruments

Rating system taking into account signs (objective) and symptoms (subjective) which may occur along a continuum

Ability to be serially administered to track changes over time

Modelled after the Clinical Institute Withdrawal Assessment of Alcohol Scale revised (CIWA-Ar)

Most commonly used tool

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs. 2003 Apr.-Jur;35(2):253-9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.

Day/Month/Year Page 10

COWS

Resting Pulse Rate: beats/minute Measured after patient is sitting or lying for one minute. 0 pulse rate 80 or below 1 pulse rate 81-100 2 pulse rate 101–120 4 pulse rate greater than 120	GI Upset: Over last half-hour 0 no GI symptoms 1 stomach cramps 2 nausea or loose stool 3 vomiting or diarrhoea 5 multiple episodes of diarrhoea or vomiting
Sweating: Over past half-hour not accounted for by room temperature or patient activity. O no report of chills or flushing 1 subjective report of chills or flushing 2 flushed or observable moistness on face 3 sweat streaming down face	Tremor: Observation of outstretched hands 0 no tremor 1 tremor can be felt but not observed 2 slight tremor observable 4 gross tremor or muscle twitching
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	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
Pupil size 0 pupils primed 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	Anxiety or irritability 0 none 1 patient reports increasing irritability or anxiousness 2 patient obviously irritable or anxious 4 patient so irritable or anxious that participation in the assessment is difficult
Bone or joint aches: If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored on to present a mild diffuse discomfort 2 patient reports severe diffuse aching of joints/muscles 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort	Gooseflesh skin: 0 skin is smooth 3 piloerection of skin can be felt or hairs standing up on arms 5 prominent piloerection
Runny nose or tearing: Not accounted for by cold symptoms or allergies 0 not present 1 nasel stuffiness or unusually moist eyes 2 nose running or tearing 4 nose constantly running or tears streaming down cheeks	Total score: The total score is the sum of all 11 items. Initials of person completing assessment:

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawa

COWS





Do we all score the same?

Tomaszewski CA, Quenzer F, Corbett B, Lafree A, Lasoff D, Romo J, Mukau L. Interobserver agreement between emergency clinicians and nurses for Clinical Opiate Withdrawal Scale. J Am Coll Emerg Physicians Open. 2021 Jun 18;2(3):e12462. doi: 10.1002/emp2.12462. PMID: 34179884; PMCID: PMC8212561.7

Day/Month/Year Page 12

Subjective vs Objective Measurements

Dilemma

Mix of clinical signs and reported symptoms

Resting Pulse Rate: Measured after patient is sitting or lyin Digective 0 pulse rate 80 or below GI Upset: Over last half-hour 0 no GI symptoms **Objective &** 1 stomach cramps **Subjective** 1 nulse rate 81–100 2 nausea or loose stool 2 pulse rate 101–120 4 pulse rate greater than 120 vomiting or diarrhoea 5 multiple episodes of diarrhoea or vomiting Sweating: Over past half-hour not accounted for by room temperature or patient activity. Objective & O no report of chills or flushing 1 subjective report of chills or flush Subjective Tremor: Observation of outstretched hands 0 no tremor Objective 1 tremor can be felt but not observed 2 slight tremor observable 2 flushed or observable moistnes 3 sweat streaming down face 4 gross tremor or muscle twitching Yawning: Observation during assessment Objective Restlessness: Observation during assessment Objective & 0 able to sit still Objective & 1 reports difficulty sitting still, but is able to do so 3 frequent shifting or extraneous mo Subjective Object 1 yawning once or twice during assessment 2 yawning three or more times during assessment 5 unable to sit still for more than a few seconds 4 yawning several times per minute Pupil size Anxiety or irritability pupils pinned or normal size for roo pupils possibly larger than normal for room light **Objective &** 0 none Objective & 1 patient reports increasing irritability anxiousness 2 patient obviously irritable or anxious up jective 2 pupils moderately dilated 5 pupils so dilated that only the rim of the iris is visible 4 patient so irritable or anxious that participation in the assessment is difficult Bone or joint aches: If patient was having pain previously only the additional component attribute & Gooseflesh skin: Objective 3 piloerection of skin can be felt or hairs standing up on arm 5 prominent piloerection withdrawal is scored **Subjective** O not present mild diffuse discomfort patient reports severe diffuse aching of joints/mild 4 patient is rubbing joints or muscles and is unable to sit still because of discomfort Runny nose or tearing: Not accounted for by cold symptoms or allergies Objective Total score: The total score is the sum of all 11 items 0 not present 1 nasal stuffiness or unusually moist eyes Initials of person completing nose running or tearing nose constantly running or tears streaming down cheeks

Score: 5-12 = mild; 13-24 = moderate; 25-36 = moderately severe; more than 36 = severe withdrawal

Interobserver agreement



Study looking at correlation of scoring for opioid withdrawal using the COWS ED clinicians and nurses independently scored 120 patients

Tomaszewski CA, Quenzer F, Corbett B, Lafree A, Lasoff D, Romo J, Mukau L. Interobserver agreement between emergency clinicians and nurses for Clinical Opiate Withdrawal Scale. J Am Coll Emerg Physicians Open. 2021 Jun 18;2(3):e12462. doi: 10.1002/empc_12462. PMID: 3479884. PMID: PhMG





Interobserver agreement

 TABLE 3
 Observed concordance along with weighted kappas for agreements by individual contributor to COWS

Individual measurements	Observed concordance	Weighted kappa	95% CI LL	95% CI UL	Strength of agreement
Heart rate	84.1%	0.78	0.68	0.88	Substantial
Sweating	65.8%	0.45	0.31	0.59	Moderate
Restlessness	64.2%	0.50	0.28	0.56	Moderate
Pupil size	70.0%	0.18	0	0.38	Fair
Bone/joint aches	60.0%	0.42	0.29	0.54	Moderate
Runny nose/tears	70.8%	0.33	0.15	0.51	Fair
Gastrointestinal upset	65.0%	0.48	0.35	0.61	Moderate
Tremor	65.0%	0.32	0.15	0.49	Fair
Yawning	81.7%	0.29	0.10	0.48	Fair
Anxiety/irritability	58.3%	0.46	0.35	0.58	Moderate
Gooseflesh	83.3%	0.44	0.21	0.66	Moderate

Abbreviations: CI, confidence interval; COWS, Clinical Opiate Withdrawal Scale; LL, lower limit; UL, upper limit.

Tomaszewski CA, Quenzer F, Corbett B, Lafree A, Lasoff D, Romo J, Mukau L. Interobserver agreement between emergency clinicians and nurses for Clinical Opiate Withdrawal Scale. J Am Coll Emerg Physicians Open. 2021 Jur 18-2(3):s12462. doi: 10.1002/empc.124662. PMID: 34179884. PMID:19

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COWS Score





TABLE 2 Buprenorphine ED induction based on withdrawal physician categorization

Withdrawal severity	Number of patients	Number induced	Percentage induced (%)
None (0-4)	51	9	17.6
Mild (5-12)	53	34	64.2
Moderate (13-24)	22	22	100
Moderate severe (25–36)	3	3	100
Severe (> 37)	0	0	N/A
TOTAL	120	70	58.3

Abbreviation: ED, emergency department.

Tomaszewski CA, Quenzer F, Corbett B, Lafree A, Lasoff D, Romo J, Mukau L. Interobserver agreement between emergency clinicians and nurses for Clinical Opiate Withdrawal Scale. J Am Coll Emerg Physicians Open. 2021 Jur 18-2(3):s12462. doi:10.1002/emp2-12462. PMID: 34179884. PMID:19-PMC8212561.

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Buprenorphine Dose

TABLE 1 Buprenorphine dosing

Induction in ED	Dose (mg)	Number (n = 120)	Percentage
No	0	52	43
Yes	2	7	5.8
	4	1	0.8
	6	1	0.8
	8	38	32
	16	19	16
	24	2	1.6

Abbreviation: ED, emergency department.

Tomaszewski CA, Quenzer F, Corbett B, Lafree A, Lasoff D, Romo J, Mukau L. Interobserver agreement between emergency clinicians and nurses for Clinical Opiate Withdrawal Scale. J Am Coll Emerg Physicians Open. 2021 Jun 16;2(3):s12462. doi:10.1020/empc.12462. PMID: 34179884. PMID:D PMIGA:12561.

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Confounders





What else can impact scoring?



What else do we need to consider?





Medical factors?

Psychological factors?

Medications?

Footnote to go here



Vignette







St. Vincent's Hospital, Melbourne Australa



Vignette

44yo single Aboriginal female, on DSP, admitted to the inpatient psychiatric service in the context of worsening psychotic symptoms over 2 months, including auditory hallucinations from a device she believes is implanted in her body, on a background of daily methamphetamine and cannabis use with previous admissions for Schizophrenia and Opioid Use Disorder on maintenance therapy.

Referred to DOAM during psychiatric admission requesting early administration of her Buvidal depot. On 224mg 3/52

Opiate withdrawal symptoms: commented 'jittery, restless and crying' then stated 'sluggish, tired and off colour'; unable to state specifically due to opiates.

History of akathisia from anti-psychotics and noted to be restless on exam



COWS Score?





Hypothetically

Restlessness = 5

Anxiety or irritability = 4

Also a tremor = 4

COWS Score = 13 or Moderate Withdrawal

Implications?



Akathisia and EPSE scores







Barnes Akathisia Rating Scale



BARN	ES AKATHISIA RATING SCALE Barnes TR (1989) A rating scale for drug-induced akathisia. British Journal of i	Psychiatry 154: 672-676		
1. Obje		SCORE:		
1.	Normal, occasional fidgety movements of limbs. Presence of characteristic restless movements: shuffling or tramping movem or swinging of one leg while sitting, and/or rocking from foot to foot or 'w when standing, but movements present for less than half the time observed. Observed phenomena, as described in (1) above, which are present for observation period. Patient is constantly engaged in characteristic restless movements, and/or remain seated or standing without walking or pacing, during the time observed.	alking on the spot' at least half the has the inability to		
2. Subj	ective: Awareness of restlessness	SCORE:		
1. 2.	Absence of inner restlessness. Non-specific sense of inner restlessness. Patient is aware of an inability to keep the legs still, or a desire to mor complains of inner restlessness aggravated specifically by being required to st Awareness of an intense compulsion to move most of the time and/or report walk or pace most of the time.	and still.		
3. Subj	ective: Distress related to restlessness	SCORE:		
1.	No distress. Mild. Moderate. Severe.			
4. Glob	val clinical assessment of akathisia	SCORE:		
	and have		David Armsh Mana	

Abnormal Involuntary Movements Scale



	ATINGS: Rate highest severity observed. Rate	RATER	RATER	RATER	RATER
	t occur upon activation one less than those observed				I
spontaneously	Circle movement as well as code number that applies.	Date	Date	Date	Date
Facial and	1. Muscles of Facial Expression	01234	01234	01234	01234
Oral	e.g. movements of forehead, eyebrows, periorbital area,				
Movements	cheeks, including frowning, blinking, smiling, grimacing				
	2. Lips and Perioral Area	01234	01234	01234	01234
	e.g., puckering, pouting, smacking				
	3. Jaw e.g. biting, clenching, chewing, mouth opening.	01234	01234	01234	01234
	lateral movement				
	Tongue Rate only increases in movement both in and out of mouth. NOT inability to sustain movement. Darting in and out of mouth.	01234	01234	01234	01234
Extremity Movements	5. Upper (arms, wrists,, hands, fingers) Include chorse; movements (i.e., rapid, objectively purposeless; irregular, spontaneous) attended movements (i.e., slow, irregular, complex, serpentine). DO NOT INCLUDE TREMOR (i.e., repetitive, regular, rhythmic)	01234	01234	01234	01234
	Lower (legs, knees, ankles, toes) e.g., lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot.	01234	01234	01234	01234
Trunk Movements	 Neck, shoulders, hips e.g., rocking, twisting, squirming, pelvic gyrations 	01234	01234	01234	01234
	8. Severity of abnormal movements overall	01234	01234	01234	01234
Global Judgments	9. Incapacitation due to abnormal movements	01234	01234	01234	01234
·	Taleind's awareness of abnormal movements Rate only ableind's report No awareness 0 Aware, no distress 1 Aware, mid distress 2 Aware, medidated sitress 3 Aware, severe distress 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
Dental Status	11. Current problems with teeth and/or dentures?	No Yes	No Yes	No Yes	No Yes
	12. Are dentures usually worn?	No Yes	No Yes	No Yes	No Yes
	13. Edentia?	No Yes	No Yes	No Yes	No Yes
	14. Do movements disappear in sleep?	No Yes	No Yes	No Yes	No Yes

Footnote to go here

Day/Month/Vear

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Conclusion





COWS is a validated tool to measure opiate withdrawal

A mix of objective and subjective measures can vary scores between clinicians

Careful assessment of signs and symptoms to ensure attributable to opioid withdrawal, as there can be considerable overlap in scoring patients who may have co-morbid medical and psychiatric conditions which can alter scores







Monitoring symptoms pre and post withdrawal





TABLE 5 The Subjective Opiate Withdrawal Questionnaire (Loimer, Linzmayer & Grunberger 1991) 1. I feel very good 2. My concentration is poor 3. I cannot think clearly 4. I have a good appetite 5. My thoughts revolve around drugs 6. I am optimistic 7. I feel active 8. I have feelings of anxiety 9. I am indifferent 10. I skeep very well 11. I feel restless 12. My mood is changeable 13. I am depressed 14. I am itred and weak 15. I have severe withdrawal symptoms 16. I am irritable and grumpy 17. I have no pain 18. Sex interests me greatly 19. I am sweating heavily 19. I am sweating heavily 19. I have severe diarrhea 20. I am sweating heavily 21. I me an one of the me have been been by the items on column 1 and on the other end by the items in column 2. The total score was the sum of analogue scores for all 20 items.

Wesson DR, Ling W. The Clinical Opiate Withdrawal Scale (COWS). J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9. doi: 10.1080/02791072.2003.10400007. PMID: 12924748.

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CLINICAL INSITUTUE WITHDRAWAL ASSESSMENT OF ALCOHOL SCALE, REVISED (CIWA-AR)

CIWA-Ar

Pulse or heart rate, taken for one minute:	Blood pressure:
NAUSEA AND VOMITING — Ask "Do you feel sick to your stemar? Heave you ownted?" Observation. On on base and no wormling — Initial reases with no wormling 2 a second of the property of the pr	TACTILE DISTURBANCES — did: "steep you any ithing, ms and reedles sentations, any burning, any murtimes, or do you leel bug; crawling on or under your skin?" Observation. O none 1 very mild riching, priss and needles, burning or numbness 2 mild riching, priss and needles, burning or numbness 3 moderate intring, pins and needles, burning ornumbness 5 severe hallucrantions 6 externely severe hallucrantions 7 continuous hallucrantions
TREMOR — Arms extended and fingers spread apart. Deberration. On to termor I not visible, but can be felt fingertip to fingertip A moderate, with patient's arms extended 5 7 3 severe, even with arms not extended	AUDITORY DISTUBBANCES — Ad: "Ap you mon away of counds among out a teely hard?" Do they frighten you's peer hard and the second and the property of the proper
PAROXYSMAL SWEATS — Observation. To receive the control of the co	VISUAL DISTURBANCES — Ask 'Does the light appear to be too bright? Is cord rifferent? One that they one yell a vous seeing anything that is disturbing to you? Are you seeing things you now are not they are? Observation. On or present I very mild sensibility is required to the property of the property
ANXIETY — Ask "Do you feel nervous?" Observation. On a markey, at ease mind amous mind amous 4 moderately anxious, or guarded, so anxiety is inferred 5 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	HEADACHE, FULLNESS IN HEAD — Act Toos you have seed different Doos steel laid tente in Sund amond your facility. On not rate for dizoness or lightheadedness. Otherwise, rate severity on present of the process of lightheadedness. Otherwise, rate severity one present of the process of the pro
AGITATION — Observation. Toronnal activity 1 somewhat more than normal activity 2 4 moderately fidgety and restless 7 access back and forth during most of the interview, or constantly threaders about	ORIENTATION AND CLOUDING OF SENSORIUM — Ak. 'What day is this 'Whee are you'd who an It' O criented and can do seral additions I cannot deseral additions or a sucretain about date cannot deseral additions or a sucretain about date and the seral additions or a sucretain about date deserved to the served of the
The CIMA-Ar is not copyrighted and may be reproduced freely, Sullian, 1.T.; Syloza, C.; Schneiderman, J.; Hazeija, C.A.; and Sellera, E.M. Assessment of activel withdrawa? The revised Crisinal Institute Withdrawal Assessment for Alcohol scale (CIWA-Ar). British Journal of Addiction 84:1353-1357, 1989.	Patients scoring less than 10 do not usually need additional medication for withdrawal. Maximum Possible Score 6