UCSF Medical Center
UCSF Benioff Children's Hospital

Withdrawal Assessment Tool in Pediatric Acute Care and Transitional Care Patients

POLICY
Integrated Pain & Palliative Care
Patient Care
Issued: Feb 2018
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I. PURPOSE

To describe the Withdrawal Assessment Tool (WAT-1) and its use in monitoring narcotic (opioid) and/or benzodiazepine withdrawal symptoms in pediatric acute care and transitional care patients.

II. REFERENCES

Deborah D, Haegerich T, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain. MMWR Recomm Rep 2016; 65 (No. 1):[1-50]

Linda S. Franck, PhD, RN, Sion Kim Harris, PhD, et al (2008). *The Withdrawal Assessment Tool–1 (WAT–1): An assessment instrument for monitoring opioid and benzodiazepine withdrawal symptoms in pediatric patients.* Pediatric Critical Care Med: Vol. 9, No. 6

UCSF Benioff Children's Hospital Children's Intensive Care Unit Policy & Procedure: Withdrawal Assessment Tool in Pediatric Critical Care Patients

III. DEFINITIONS

Withdrawal Assessment Tool (WAT-1) - the WAT-1 is an 11 item/12 point scale for monitoring narcotic (opioid) and/or benzodiazepine withdrawal symptoms in pediatric patients.

Pediatric Assessment: Withdrawal assessment, especially in preverbal or nonverbal children, can be challenging. The WAT-1 is used to identify iatrogenic withdrawal syndrome. The nurse should tailor their assessments to the child's developmental level, medical status and temperament using the WAT-1.

Iatrogenic Withdrawal Syndrome - Iatrogenic withdrawal syndrome is the term used for a characteristic pattern of unpleasant signs and symptoms that typically follows too rapid tapering or abrupt cessation of narcotics (opioids), benzodiazepines or other drugs with central nervous system depressant effects. Prominent manifestations include nervous system hyperirritability, autonomic system dysregulation, gastrointestinal dysfunction and motor abnormalities.

Start of Weaning: The date and time associated with a deliberate attempt to discontinue narcotics (opioids) and/or benzodiazepines.

IV. POLICY

None.

V. PROCEDURES

A. Assessment and Documentation

1. Assess and document the patient's WAT-1 in the electronic record.
2. Start WAT-1 scoring from the **first day of weaning** in patients who have received narcotics (opioids) and or benzodiazepines by infusion or regular dosing for prolonged periods (e.g., ≥ 5 days). Continue twice daily scoring until 72 hours after the last dose.
3. The WAT-1 is completed and documented in the Acute Care Units along with the POSS at least once per 12 hour shift at 06:00 and 18:00 ± 2 hours until 72 hours after the last PRN narcotic (opioid) and/or benzodiazepine dose.
4. More frequent assessment may be necessary in patients who show symptoms of

withdrawal from narcotics (opioids) and/or benzodiazepines. The increased frequency of the WAT-1 assessments in these patients should follow the assessment – intervention – reassessment cycle for treating patients' withdrawal.

B. Assessment Method

1. Review the WAT-1, familiarizing yourself with the indicators and how they are scored.
2. Review nursing documentation in the previous 12 hours.
3. Complete a 2 minute observation period with the patient at rest.
4. Assess patient during a progressive arousal then assess patient during an observation period following the stimulus. Use progressive stimuli to elicit the patient's response; specifically, using a calm voice, call the patient's name. If no response, call the patient's name and gently touch the patient's body. If no response, assess the patient's response to a planned noxious procedure, e.g., endotracheal suctioning. If a noxious procedure is not planned then, using a pencil/pen, provide < 5 seconds of direct pressure to the patient's nail bed.
5. Complete a post-stimulus recovery observation period.

C. Scoring Method:

Presence and intensity of withdrawal symptoms consist of:

1. **3 indicators** obtained from the nursing documentation in the **previous 12 hours** are scored with one point:
   a. **Loose/watery stools** that are not consistent with the patient's age, medical condition or baseline stooling pattern.
   b. **Vomiting/retching/gagging** that cannot be attributed to other causes or interventions.
   c. **Temperature elevation** that remains >37.8 more frequently than not during the previous 12 hours and not believed to be associated with an infection.
2. **5 indicators** assessed during a **2 minute observation** of the patient at rest are scored with one point:
   a. **State behavior** based on observation in acute care: asleep/awake/calm = 0 or awake/distressed = 1. The SBS portion of this question is for intubated patients (critical care) ONLY.
   b. **Tremors** that are moderate to severe and cannot be attributed to another clinical cause.
   c. **Sweating** that is observed and not related to an appropriate temperature regulation response.
   d. **Uncoordinated/repetitive movements** that are moderate to severe including head turning, leg or arm flailing or torso arching.
   e. **Yawning/sneezing** that is observed more than once in the 2 minute observation period.
3. **2 indicators** assessed during a **progressive arousal stimulus** scored with one point:

a. **Startle to touch** that is moderate or severe

b. **Muscle tone** that is increased

4. **1 indicator** assessed during an **observation period** following the stimulus scored with up to two points:

   a. Time to return to calm state that is greater than 5 minutes will receive 2 points. If the time to return to calm state is 2-5 minutes, it will receive 1 point.

5. The final WAT-1 score is the total sum of all indicators (0-12).

D. Interpretation:

1. A higher WAT-1 score indicates more withdrawal symptoms while a lower score indicates fewer withdrawal symptoms. WAT-1 scores should be interpreted based on their trend over time.

2. For WAT-1 scores greater or equal to 4 (or as indicated by the physician's order), notify the primary service.

VI. RESPONSIBILITY

For questions regarding this policy contact the IP3 Integrated Pediatric Pain & Palliative - Pediatric Pain RN.

VII. HISTORY OF THE PROCEDURE

Author: Lisa Purser RN BSN, Alicia Heilman RN BSN, Lena Ngo RN MSN (adapted from UCSF BCH Children's Intensive Care Unit Policy & Procedure, Withdrawal Assessment tool in Pediatric Critical Care Patients)
Reviewed and Revised: n/a
Last Revision/Review: n/a

VIII. APPENDIX

A. Withdrawal Assessment Tool Version 1 (WAT-1)
B. Withdrawal Sign/Symptoms Table
C. Pediatric Acute Care Opioid Weaning Guidelines

Appendix A
WAT-1 Tool

WITHDRAWAL ASSESSMENT TOOL VERSION 1 (WAT – 1)

Patient Identifier														
	Date:													
	Time:													
Information from patient record, previous 12 hours														
Any loose /watery stools	No = 0 Yes = 1													
Any vomiting/wretching/gagging	No = 0 Yes = 1													
Temperature > 37.8°C	No = 0 Yes = 1													
2 minute pre-stimulus observation														
State	SBS[1] ≤ 0 or asleep/awake/calm = 0 SBS[1] ≥ +1 or awake/distressed = 1													
Tremor	None/mild = 0 Moderate/severe = 1													
Any sweating	No = 0 Yes = 1													
Uncoordinated/repetitive movement	None/mild = 0 Moderate/severe = 1													
Yawning or sneezing	None or 1 = 0 ≥2 = 1													
1 minute stimulus observation														
Startle to touch	None/mild = 0 Moderate/severe = 1													
Muscle tone	Normal = 0 Increased = 1													
Post-stimulus recovery														
Time to gain calm state (SBS[1] ≤ 0)	< 2min = 0 2 - 5min = 1 > 5 min = 2													
Total Score (0-12)														

WITHDRAWAL ASSESSMENT TOOL (WAT – 1) INSTRUCTIONS

- Start WAT-1 scoring from the **first day of weaning** in patients who have received opioids +/or benzodiazepines by infusion or regular dosing for prolonged periods (e.g., > 5 days). Continue twice daily scoring until 72 hours after the last dose.
- The Withdrawal Assessment Tool (WAT-1) should be completed along with the SBS[1] at least once per 12 hour shift (e.g., at 08:00 and 20:00 ± 2 hours). The progressive stimulus used in the SBS[1] assessment provides a standard stimulus for observing signs of withdrawal.

Obtain information from patient record (this can be done before or after the stimulus):
- ✓ **Loose/watery stools**: Score 1 if any loose or watery stools were documented in the past 12 hours; score 0 if none were noted.
- ✓ **Vomiting/wretching/gagging**: Score 1 if any vomiting or spontaneous wretching or gagging were documented in the past 12 hours; score 0 if none were noted
- ✓ **Temperature > 37.8°C**: Score 1 if the modal (most frequently occurring) temperature documented was greater than 37.8 °C in the past 12 hours; score 0 if this was not the case.

2 minute pre-stimulus observation:
- ✓ **State**: Score 1 if awake and distress (SBS[1]: ≥ +1) observed during the 2 minutes prior to the stimulus; score 0 if asleep or awake and calm/cooperative (SBS[1] ≤ 0).
- ✓ **Tremor**: Score 1 if moderate to severe tremor observed during the 2 minutes prior to the stimulus; score 0 if no tremor (or only minor, intermittent tremor).
- ✓ **Sweating**: Score 1 if any sweating during the 2 minutes prior to the stimulus; score 0 if no sweating noted.
- ✓ **Uncoordinated/repetitive movements**: Score 1 if moderate to severe uncoordinated or repetitive movements such as head turning, leg or arm flailing or torso arching observed during the 2 minutes prior to the stimulus; score 0 if no (or only mild) uncoordinated or repetitive movements.
- ✓ **Yawning or sneezing** > 1: Score 1 if more than 1 yawn or sneeze observed during the 2 minutes prior to the stimulus; score 0 if 0 to 1 yawn or sneeze.

1 minute stimulus observation:
- ✓ **Startle to touch**: Score 1 if moderate to severe startle occurs when touched during the stimulus; score 0 if none (or mild).
- ✓ **Muscle tone**: Score 1 if tone increased during the stimulus; score 0 if normal.

Post-stimulus recovery:
- ✓ **Time to gain calm state** (SBS[1] ≤ 0): Score 2 if it takes greater than 5 minutes following stimulus; score 1 if achieved within 2 to 5 minutes; score 0 if achieved in less than 2 minutes.

Sum the 11 numbers in the column for the total WAT-1 score (0-12).

[1]Curley et al. State behavioral scale: A sedation assessment instrument for infants and young children supported on mechanical ventilation. Pediatr Crit Care Med 2006;7(2):107-114.

Appendix B

Withdrawal Signs/Symptoms

	Central Nervous System Irritability		GI Dysfunction	Autonomic Dysfunction
Opioids	• ↑ Muscle tone • Myoclonus • Ataxia	• Abnormal movements • Pupil dilation (>4mm)	• Vomiting • Poor feeding • Diarrhea	• Tachypnea • Yawning • Sneezing • Hypertension • Mottling
Benzodiazepines	• Muscle twitching • Inconsolable cry • Grimacing • Visual, auditory hallucinations	• Jitteriness • Disorientation • Seizures • Movement disorder		• Frequent suction required
Opioids & Benzodiazepines	• Tremor • Anxiety • Choreoathetoid movements	• Agitation/crying • Irritability, restlessness • Sleep disturbance		• Fever • Sweating • Tachycardia

Appendix C

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Pediatric Acute Care Opioid Weaning Guidelines

*** The below dosing recommendations should be used as a general guide. ***

TIME EXPOSED	< 5 DAYS	5-9 DAYS	≥ 10 DAYS
TAPER TEMPO **OME = Oral Morphine Equivalents	No Taper	Rapid Taper • a decrease of 20-50% of the initial OME dose every 2-3 days Consider discontinuing the medication when it has reached 10-25% of the initial OME dose	Slow Taper • a decrease of 10% of the initial OME dose every 5-7 days
WAT SCORE	WAT scoring q shift, identify WAT Score Threshold (generally ≥ 4 indicates withdrawal, but may be adjusted upward to account for chronic symptoms)		
WAT SCORE and PRN NEED: TAPER TEMPO ADJUSTMENTS WAT score below threshold for 2 consecutive time points OR < 3 PRN's per 8h period	NA	• Continue current regimen. • May consider increased dose reduction and/or faster wean	
WAT score at or above threshold for 2 consecutive time points OR number of PRN's ≥ 3 per 8 h period	NA	• Consider rescue dosing PRN **See below for rescue dose recommedndations. • Consider delay in weaning schedule or stepping back to previous effective dose	

General Weaning Information

- The rate at which patients are weaned off opioids is dependent on many factors and may include:
  - Reason for initiation of medications: sedation for intubation (CALM protocol), acute pain, acute on chronic pain
  - How long the patient has been on the medications
  - Presence of ongoing symptoms
  - Psychosocial factors
- The risk of withdrawal increases with the duration and dosage of the opioid.
- In general when weaning, decrease dose of opioid (ie 0.4mg to 0.3mg) before increasing dosing interval (ie q6h to q8h).
- Generally, the longer the patient has been on medications, the slower the taper.
- Symptoms associated with withdrawal can be caused by concurrent illnesses, and should be considered when weaning.

Transition to Intermittent Dosing

- Whenever clinically appropriate, consider transition from PCA infusion to intermittent dosing (IV/PO).
- Longer acting agents (ie methadone) may be indicated for patients with long exposure.

Rescue Dosing

- Prescribe the same dosage (or a lower dosage) as the previously prescribed PRN medication.
- If no previous PRN dose available, consider a rescue dose of 10% of the current OME

ORAL MORPHINE EQUIVALENTS (OME)

- OMEs are calculated to find a patient's daily opioid usage. Weaning parameters and dose reductions (as outlined above) are based off of the OME.
- Patients on > 60mg/day OME for at least 2 weeks are considered opioid tolerant and providers should consider exploring other pain intervention modalities.

Oral Morphine Equivalents Calculations

STEP 1) Calculate Daily Use of Each and Every Opioid (including the as-needed doses in most cases).
Example: Patient is taking Oxycodone extended release PO 60mg/day and Hydromorphone PO 16mg/day

STEP 2) Calculate equivalence by using the table located within the UCSF Opioid Equivalence Table document.
Example: Oxycodone PO extended release 60mg/day = Morphine PO 90mg/day
Hydromorphone PO 16mg/day = Morphine PO 64mg/day

Table should only be utilized for opioid equivalence, NOT for opioid conversion.

*** Some of the more commonly used opiates are listed below. See table for complete list.

Morphine	Hydromorphone
Morphine 1mg IV = Morphine 3mg PO	Hydromorphone 1mg IV = Hydromorphone 5mg PO
Oxycodone/Oxycontin	Hydromorphone 1mg IV = Morphine 20 mg PO
Oxycodone 2mg PO = Morphine 3mg PO	Hydromorphone 1mg PO = Morphine 4mg PO

STEP 3) Add the total oral morphine equivalents.
Example: Morphine 90mg/day + Morphine 64mg/day >> 154mg/day Oral Morphine Equivalents (OME)

*** UCSF Opioid Equivalence Table found under Carelinks >> Medical Center Manuals >> Pharmacy >> Under Search (Opioid Equivalence Table). Please reference table for more thorough details.

- No validated conversion factors exist for agents other than opioids.
- For patients that do not tolerate this conversion, the doses of intermittent medications may be adjusted based on withdrawal symptoms in order to continue transitioning
- Adjuvant Medications should be considered for symptom management (ie: clonidine, anti emetics, anti agitation).

Consider IP3 consult for ANY opioid/benzodiazepine weaning or opioid conversion issues and questions (including initiation of methadone, or other rescue dose questions).