Appendix 1. University of Minnesota Amplatz Children's Hospital Opioid Weaning Guideline

1. Pharmacist to order Narcotic Withdrawal Scores Q2H X 24 hours, then per table below:

Narcotic Withdrawal Score	Frequency of Assessment
0 - 8	Reassess in 6 hours
9-11	Reassess in 4 hours
Greater than or equal to 12	Reassess in 2 hours

2. Discontinue all previous PRN opioid orders.
3. Order methadone initial dose and taper based on risk assessment:

LOW RISK PATIENTS (duration of opioid infusion < 5 days):

Enteral Dosing (preferred)

Taper Step Number	Methadone Dose	# of Doses
1 (Starting Dose)	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal	3
2	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q12H for opioid withdrawal	2
3	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q24H for opioid withdrawal	1
4	Discontinue Methadone	

IV Dosing (Pharmacist to convert patient to enteral dosing as soon as clinically appropriate using a IV:PO ratio of 1:2)

Taper Step Number	Methadone Dose	# of Doses
1 (Starting Dose)	Methadone _____mg (0.025 mg/kg/dose) IV Q8H for opioid withdrawal	3
2	Methadone _____mg (0.025 mg/kg/dose) IV Q12H for opioid withdrawal	2
3	Methadone _____mg (0.025 mg/kg/dose) IV Q24H for opioid withdrawal	1
4	Discontinue Methadone	

MODERATE RISK PATIENTS (duration of opioid infusion 5-9 days):

Enteral Dosing (preferred)

Taper Step Number	**Methadone Dose**	**# of Doses**
1 (Starting Dose)	Methadone _____mg (0.1 mg/kg/dose) PO/Enteral Tube Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.1 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.08 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.06 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q12H for opioid withdrawal.	4
7	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q24H for opioid withdrawal.	2
8	Discontinue Methadone	

IV Dosing (Pharmacist to convert patient to enteral dosing as soon as clinically appropriate using a IV:PO ratio of 1:2)

Taper Step Number	**Methadone Dose**	**# of Doses**
1 (Starting Dose)	Methadone _____mg (0.05 mg/kg/dose) IV Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.05 mg/kg/dose) IV Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.04 mg/kg/dose) IV Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.03 mg/kg/dose) IV Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.02 mg/kg/dose) IV Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.02 mg/kg/dose) IV Q12H for opioid withdrawal.	4
7	Methadone _____mg (0.02 mg/kg/dose) IV Q24H for opioid withdrawal.	2
8	Discontinue Methadone	

HIGH RISK PATIENTS (duration of opioid infusion > or = 10 days OR cumulative fentanyl dose of 1500-2499 mcg/kg or equivalent):

Enteral Dosing (preferred)

Taper Step Number	Methadone Dose	# of Doses
1 (Starting Dose)	Methadone _____mg (0.1 mg/kg/dose) PO/Enteral Tube Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.1 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.09 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.08 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.07 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.06 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
7	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
8	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q12H for opioid withdrawal.	4
9	Methadone _____mg (0.05 mg/kg/dose) PO/Enteral Tube Q24H for opioid withdrawal.	2
10	Discontinue Methadone	

IV Dosing (Pharmacist to convert patient to enteral dosing as soon as clinically appropriate using a IV:PO ratio of 1:2)

Taper Step Number	Methadone Dose	# of Doses
1 (Starting Dose)	Methadone _____mg (0.05 mg/kg/dose) IV Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.05 mg/kg/dose) IV Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.045 mg/kg/dose) IV Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.04 mg/kg/dose) IV Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.035 mg/kg/dose) IV Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.03 mg/kg/dose) IV Q8H for opioid withdrawal.	6
7	Methadone _____mg (0.025 mg/kg/dose) IV Q8H for opioid withdrawal.	6
8	Methadone _____mg (0.025 mg/kg/dose) IV Q12H for opioid withdrawal.	4

9	Methadone _____mg (0.025 mg/kg/dose) IV Q24H for opioid withdrawal.	2
10	Discontinue Methadone	

VERY HIGH RISK PATIENTS (duration of opioid infusion > or = 28 days OR cumulative fentanyl dose of > or =2500 mcg/kg or equivalent):

Enteral Dosing (preferred)

Taper Step Number	**Methadone Dose**	**# of Doses**
1 (Starting Dose)	Methadone _____mg (0.2 mg/kg/dose) PO/Enteral Tube Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.2 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.18 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.16 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.14 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.12 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
7	Methadone _____mg (0.1 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
8	Methadone _____mg (0.08 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
9	Methadone _____mg (0.06 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
10	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q8H for opioid withdrawal.	6
11	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q12H for opioid withdrawal.	4
12	Methadone _____mg (0.04 mg/kg/dose) PO/Enteral Tube Q24H for opioid withdrawal.	2
13	Discontinue Methadone	

IV Dosing (Pharmacist to convert patient to enteral dosing as soon as clinically appropriate using a IV:PO ratio of 1:2)

Taper Step Number	Methadone Dose	# of Doses
1 (Starting Dose)	Methadone _____mg (0.1 mg/kg/dose) IV Q6H for opioid withdrawal.	8
2	Methadone _____mg (0.1 mg/kg/dose) IV Q8H for opioid withdrawal.	6
3	Methadone _____mg (0.09 mg/kg/dose) IV Q8H for opioid withdrawal.	6
4	Methadone _____mg (0.08 mg/kg/dose) IV Q8H for opioid withdrawal.	6
5	Methadone _____mg (0.07 mg/kg/dose) IV Q8H for opioid withdrawal.	6
6	Methadone _____mg (0.06 mg/kg/dose) IV Q8H for opioid withdrawal.	6
7	Methadone _____mg (0.05 mg/kg/dose) IV Q8H for opioid withdrawal.	6
8	Methadone _____mg (0.04 mg/kg/dose) IV Q8H for opioid withdrawal.	6
9	Methadone _____mg (0.03 mg/kg/dose) IV Q8H for opioid withdrawal.	6
10	Methadone _____mg (0.02 mg/kg/dose) IV Q8H for opioid withdrawal.	6
11	Methadone _____mg (0.02 mg/kg/dose) IV Q12H for opioid withdrawal.	4
12	Methadone _____mg (0.02 mg/kg/dose) IV Q24H for opioid withdrawal.	2
13	Discontinue Methadone	

4. Order taper for opioid infusion, if patient is on one:

OPIOID INFUSION DURATION OF < 4 WEEKS:

FOR FENTANYL INFUSION:

- After 2nd dose of methadone, decrease opioid (fentanyl) infusion by 50% of current dose = _____mcg/kg/hr.
- After 3rd dose of methadone, decrease opioid infusion by another 50% of current dose = _____mcg/kg/hr.
- After 4th methadone dose, discontinue opioid infusion.

FOR MORPHINE OR HYDROMORPHONE INFUSION:

- After 2nd dose of methadone, decrease opioid (morphine or hydromorphone) infusion by 50% of current dose = _____mg/kg/hr.
- After 3rd dose of methadone, decrease opioid infusion by another 50% of current dose = _____mg/kg/hr.
- After 4th methadone dose, discontinue opioid infusion.

OPIOID INFUSION DURATION OF > or = 4 WEEKS:

FOR FENTANYL INFUSION:

- After 2nd dose of methadone, decrease opioid (fentanyl) infusion by 25% of current dose = _____mcg/kg/hr.
- After 4th dose of methadone, decrease opioid infusion by 50% of current dose = _____mcg/kg/hr.
- After 6th dose of methadone, decrease opioid infusion by another 50% of current dose = _____mcg/kg/hr.
- After 8th methadone dose, discontinue opioid infusion.

FOR MORPHINE OR HYDROMORPHONE INFUSION:

- After 2nd dose of methadone, decrease opioid (morphine or hydromorphone) infusion by 25% of current dose = _____mg/kg/hr.
- After 4th dose of methadone, decrease opioid infusion by 50% of current dose = _____mg/kg/hr.
- After 6th dose of methadone, decrease opioid infusion by another 50% of current dose = _____mg/kg/hr.
- After 8th methadone dose, discontinue opioid infusion.

5. Order PRNs for breakthrough withdrawal symptoms
    - Morphine sulfate _____ mg (0.05 mg/kg/dose) IV/PO Q2H PRN withdrawal score 9-11
    - Morphine sulfate _____ mg (0.1 mg/kg/dose) IV/PO Q2H PRN withdrawal score > or = 12

Clonidine ____mcg (1.7 mcg/kg/dose) PO/Enteral Tube Q8H (consider starting for all "very high risk" patients and for treatment of persistent withdrawal symptoms, such as an increasing trend of scores >6 that cannot be explained by other means)

6. Document recommendations as a progress note.

7. Make adjustments to taper schedule, per daily assessments.
    - Pharmacist or Prescriber to hold any planned decreases according to methadone taper schedule X 24 hours for withdrawal scores of 9-11 (either 2 consecutive scores of 9-11 or 3 scores of 9-11 in a 24 hour period).
    - Pharmacist or Prescriber to change methadone back to previous step in taper for withdrawal scores >/= 12. Pharmacist will re-evaluate weaning plan (either 2 consecutive scores >/=12 or 3 scores >/=12 in a 24 hour period)

SPECIAL SITUATIONS

1. Restarting continuous infusions for pain/sedation/reintubation (i.e. s/p OR):
    a. < 48 hrs: continue methadone/lorazepam with the same dose, adjusting the dosage of the continuous drips as necessary for appropriate pain/sedation. Recommend holding the methadone/lorazepam doses 6 hrs prior to and post-extubation. Restart the wean 24 hrs later.
    b. ≥48 hrs: stop methadone/lorazepam to avoid developing tolerance. Consider tapering the continuous drips if infusing > 72 hrs. Recommend restarting the methadone/lorazepam (at the previous dose) 6 hrs post-extubation. Restart the wean 24 hrs later.
2. Recommended continuous infusion rates at which time to convert to methadone/lorzepam (goal is to wean high dose sedation drips every 6-24 hrs once patient is ready for extubation):
    a. Fentanyl 1-2 mcg/kg/hr
    b. Hydromorphone 0.015-0.02 mg/kg/hr
    c. Morphine 0.1-0.15 mg/kg/hr
    d. Midazolam 0.1-0.2 mg/kg/hr