Medication	IV (mg)	PO (mg)	Initial Dosing	Interval	Considerations	Formulations
morphine	10	25	IV: 2mg PO: 5mg ER: 15mg	q3h q3h q12h	avoid in renal impairment d/t active metabolite accumulation, neurotoxicity e.g., myoclonus, szs	IR: 15, 30mg, 10mg/5mL, 20mg/mL ER: 15, 30, 60, 100, 200mg ER-24: 10, 20, 30, 50, 60, 80, 100, 200mg
oxyCODONE	n/a	20	PO: 5mg ER: 10mg	q3h q12h	safest PO option for AKI/CKD/HD	IR: 5,10, 15, 20, 30mg, 5mg/5mL 20mg/mL ER: 10, 20, 30, 40, 60, 80mg ER-X: 9, 13.5, 18, 27, 36mg
HYDROMORPHone	2	5	PO: 2mg IV: 0.5mg	q3h q3h	active metabolites, accumulation may cause neurotoxicity	IR: 2, 4, 8mg, 1mg/mL ER: 8, 12, 16, 32mg
fentaNYL	*0.15	n/a	IV: 25mcg	q2h	no active metabolites, good for AKI/CKD/HD, less hypotension	**TDF: 12, 25, 50, 75, 100mcg/hr

*See blow for more information **TDF: transdermal fentanyl patch only indicated for opioid tolerant patients (TDD >60mg/day >7days)
ER-24: morphine ER 24h (Kadian), ER-X: oxycodone (Xtampza)

Pharmacokinetics

Form	Onset	Re-dose	Titration
IV	15min	15min	>15min
PO	45-60min	60min	>3hr
ER	60-120min	12hr	36-48h
TDF	12-24hrs	72hr	6-7days

Fentanyl Conversion

Infreq IVP	fentanyl 15mcg IVP = morphine 1mg IVP
freq IVP / gtt <48h	fentanyl IV 25mcg/hr = morphine IV 1mg/hr
TDF / gtt >48h	fentanyl TD 25mcg/hr = morphine 50mg PO per day

General Pain Management Principles:

- Treat persistent pain with ATC medications e.g., short-acting ATC or long-acting
- Never IM route! SQ if no IV access
- PRN dose: 10-15% of TDD, re-calculate and adjust when long-acting changed.
- Uncontrolled pain
  - 25-50% increase for moderate pain
  - 50-100% increase for severe pain

METHADONE: *consider palliative pharmacist consultation before initiating*

- Methadone 2mg PO = Methadone 1mg IV

Methadone PO to Morphine PO

- 1 mg PO methadone → 3mg PO morphine
- Note: conversion is UNI-directional, only one way, DO NOT use this conversion to convert from morphine to methadone!

Methadone Dosing

Opioid Naïve: <60mg OME	opioid naïve dosing (2 - 7.5mg methadone per day)
60-199mg OME AND <65yo	10 : 1 (PO morphine : PO methadone)
≥ 200mg OME OR ≥ 65yo	20 : 1 (PO morphine : PO methadone)

Methadone Tips:

- If new start or converting from other opioid for pain, under palliative guidance, **MAX starting dose is methadone 10mg PO TID (30mg/day)**

Management of Opioid Side Effects: Most patients become tolerant to side effects 3-5 days, except constipation

Constipation:
- Polyethylene glycol 17gm PO daily
- Senna 17.2mg PO daily (titrate to max 4 tabs 2x/d)

Pruritus:
- Rotate to oral route
- Diphenhydramine 25mg PO/IV q6h PRN
- Hydroxyzine 25mg PO q6h PRN
- Limited evidence to support low dose naloxone

Nausea/Vomiting:
- Prochlorperazine 5-10mg PO/IV q6h PRN
- Ondansetron 4mg PO/SL/IV q6h PRN

Urinary Retention:
- Rotate to opioid without active metabolites
- Decrease or discontinue opioid therapy
- Urinary catheterization if necessary

Bradycardia/Hypotension: Consider rotation to Fentanyl

Severe Respiratory Depression: *Sedated, significant decrease in RR, pOx <85%, RASS -2 to -5*
- D/C all opioid therapy
- Consider taper of other sedating medications
- Administer dilute naloxone 0.04mg IVP q1min until patient responsive, up to 0.8mg

Neurotoxicity: *Monitor for myoclonus, increased sensitivity/allodynia to pain despite opioid escalation, pain extending beyond previously reported pain, delirium, agitation, seizures*
- Rotate to less neurotoxic agent (e.g., fentanyl, methadone)
- Reduce or D/C current opioid

Medication	Dose	Onset	Site of Action
Stimulant			
Senna	2-4 tabs 1-2x/d	6-12h	colon
Bisacodyl	5-15mg 1-3x/d	6-12h	colon
Osmotic			
PEG	17gm 1-2x/d	1-3 d	sm/lg intestine
MOM	30mL q6h	3-6h	sm/lg intestine
Mag citrate	150-300mL x1	3-6h	sm/lg intestine
Prokinetic			
Metoclopramide	10mg PO/IV q6h	1-3h	colon
Erythromycin	50mg		
PAMORA			
Methylnaltrexone	<35kg or >114kg: 0.15mg/kg SQ q24-48h 38-62 8mg SQ q24-48 62-114 12mg SQ q24-48h	<4h	mu-receptor

Drug	Equiv
Alprazolam	0.5mg
Chlordiazepoxide	10mg
Clonazepam	0.5mg
Diazepam	5mg
Lorazepam	1mg
Midazolam	2mg
Oxazepam	15mg
Temazepam	10mg
Triazolam	0.25mg

Drug	Equiv
Dexamethasone	0.75mg
Prednisone	5mg
Methylpred	4mg
Hydrocort	20mg

KETAMINE: *consider palliative pharmacist consultation before initiating*

- When given with opioids, ketamine generally reduces opioid use by 30-50%, therefore, prudent to pre-emptively reduce scheduled and/or PRN opioids by 30-50% depending on severity of pain, sedation risk and side effects anticipated.
  - Weight-based dosing (CSMC): **MAX dose for gtt at CSMC 0.06mg/kg/hr**
    - Initial dosing: 0.01-0.02mg/kg/hr
  - Conventional dosing:
    - Initial dosing: 1-2mg/hr
  - Titration: 50-100% for severe uncontrolled pain every 24hrs
- Conversion: **ketamine IV 1mg = ketamine PO 1mg**; no limits to PO dose at CSMC, needs to be ordered at compounding pharmacy and brought in by patient/family
- Note: morphine:ketamine and hydromorphone:ketamine PCAs are 1:1, caution starting ketamine in opioid:ketamine combination PCA

	Efficacy*	QTc	EPS	Sed	Szs	Mort	Equiv	CSMC formulary
Aripiprazole							7.5mg	PO/NGT (crush OK): 2, 5, 10, 15, 20mg
Clozapine							100mg	PO/NGT (crush OK): 25, 100mg
Olanzapine							5mg	PO/NGT (crush OK): 2.5, 5, 10mg ODT(SL): 5, 10mg
Risperidone							1mg	PO/NGT (crush OK): 0.5, 1, 2, 3mg ODT(SL): 0.5, 1, 2mg ; Soln(PO/SL): 1mg/mL
Quetiapine							75mg	PO/NGT (crush OK): 12.5, 25, 50,100, 200,300mg
Ziprasidone							60mg	PO: 20, 40, 60mg ; IM: 20mg/mL
Haloperidol							2mg	PO/NGT (crush OK): 0.5, 1, 2, 5mg IM/SQ/IV: 5mg/mL ; Soln(PO/SL): 2mg/mL

*Efficacy for NPS - neuropsychiatric symptoms of dementia; Darker color = increased likelihood / risk