

Symptom Management Guide for Children Near/At End-of-Life

Symptom management for paediatric palliative care patients at the end-of-life requires an astute care team that is aligned to the status of the child as well as the goals of care of the child and family.

The information included in this document is based on standards of practice/experience from Canadian paediatric palliative care experts and serves as a basic approach to assisting those who provide care to paediatric palliative care patients at the end-of-life. The management strategies and medications listed in the following table are listed alphabetically and according to system and may be used for specific indications in paediatric patients approaching end-of-life. When no suggested dosing interval is provided, the decision to provide a medication regularly or “as needed” is up to the discretion of the treating team. Furthermore, goals of care should be discussed and kept in mind prior to initiating therapies.

Patient specific consultation with specialized Paediatric Palliative Care providers at an associated Paediatric Academic Health Sciences Centre is strongly recommended in order to determine which of the strategies may be most relevant and helpful.

Symptom	Management Strategies	Medications & Suggested Initial Doses
Agitation	Consider looking for reversible cause (e.g. low sodium; high calcium). Attempt to help orient the child. Comforting social interactions may be helpful with familiar visitors. Minimize noise and avoid unnecessary stimulation.	<ul style="list-style-type: none"> Lorazepam: 0.02-0.05mg/kg/dose PO/SL/SC/IV q6-8 Haloperidol: <ul style="list-style-type: none"> Acute: 0.025-0.05mg/kg PO, may repeat 0.025mg/kg in 1hr if needed Maintenance: 0.01-0.02mg/kg PO TID Methotrimeprazine (Nozinan): 0.05-0.1mg/kg/dose PO/SC/IV q4-8h or prn (max of 25mg/dose) Olanzapine (oral or disintegrating tab): 2.5-5mg qhs
Bleeding - mucosal	Have dark towels on hand. If bleeding does not respond to medication/transfusion, and is excessive, consider palliative sedation to decrease associated anxiety.	<ul style="list-style-type: none"> Tranexamic acid: <ul style="list-style-type: none"> PO: 10-25mg/kg (max 1.5g) BID-TID IV: 45mg/kg over 24hrs Topical: apply gauze soaked in 100mg/mL inj solution Fibrin glue (Tisseel or Floseal) Topical epinephrine on gauze (1:1000) Correction of laboratory abnormalities with transfusion: <ul style="list-style-type: none"> Platelets: 10mL/kg if bleeding and <50 FFP: 10mL/kg – contains all factors & complement Cryoprecipitate: 1u/10kg = 0.5g/L rise – contains fibrinogen, FVIII, vWF, FXIII Vitamin K: 2-5 mg/dose PO/ IV
Constipation	Manage proactively when administering opioids. Most adolescents will not disclose so must be asked specifically about bowel habits	<ul style="list-style-type: none"> Polyethylene glycol 3350: 1g/kg/day (adult 17g) Senna: 5ml (<6 years) or 1-2 tabs (≥ 6 years) qhs Lactulose: 10ml OD; double daily dose until stool produced Suppositories; Enemas Methylnaltrexone: 150 micrograms/kg SC q2-3 days for refractory opioid induced constipation

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Diarrhea	Consider: new illness, diet, medications and treatment.	<ul style="list-style-type: none"> Decrease laxatives and titrate as needed. Maintain hydration Loperamide: 100-200 micrograms/kg (max 2mg) could be used cautiously for non-infectious diarrhea
Dyspnea	<p>Try deep breathing and distraction. Oxygen may be beneficial for relief of dyspnea, regardless of O2 saturations. A fan blowing on the face and/or an open window may be effective for decreasing the sensation of breathlessness.</p> <p>Opioids are used for the relief of dyspnea. Benzodiazepines may be used as adjunct if dyspnea also due to anxiety.</p>	<ul style="list-style-type: none"> If opioid naïve, Morphine at low dose (30-50% of dose used for pain) is the drug of choice. If on another opioid, or already on morphine, give breakthrough doses to effect. Midazolam: <ul style="list-style-type: none"> Buccal/SL/PO: 0.5mg/kg (5-10mg max) SC/IV Infusion: 1-5mcg/kg/min – titrate to effect Lorazepam: <ul style="list-style-type: none"> PO/SL: 0.05-1 mg/kg/dose q6-24h
Nausea & Vomiting	<p>Determination of etiology should guide treatment and medication modalities.</p> <p>Control smells and noise in the home, good oral hygiene. Visualization, distraction and relaxation have also proved effective.</p>	<p>Select agent(s) based on most responsible mechanism for nausea/vomiting:</p> <ul style="list-style-type: none"> Ondansetron: PO/SL/IV/SC: 0.15 mg/kg/dose q8h Metoclopramide: PO/IV 0.1-0.2 mg/kg q6h PO Dimenhydrinate(Gravol):PO/IV 1mg/kg/dose q4-6h PO Dexamethasone: PO/IV 0.1-0.25 mg/kg/dose q6-24h (8mg max) LORazepam (especially for emotional/anxiety related) 0.02-0.05 mg/kg/dose PO/IV q6-8 Nabilone: 0.5-2mg PO BID (max adult dose 6mg/day) Olanzapine (oral or disintegrating tab): 2.5-5mg qhs
Pain	<p>A full pain assessment is imperative to effective pain management. Consider whether there is a neuropathic component.</p> <p>Consider integrative therapies such as massage, imagery, music therapy, acupressure, acupuncture, TENS, etc.</p> <p>Consider radiotherapy for local bone pain due to solid tumours/metastases</p> <p>It has been shown that appropriate opioid use does not hasten death, but improves QOL and may actually prolong life. There is no opioid dose limit.</p> <p>Pain from advanced cancer is unlikely to be transient or improve – so imperative to</p>	<ul style="list-style-type: none"> Acetaminophen: 10-15 mg/kg/dose q4-6 (max 75mg/kg/day) Ibuprofen: 10mg/kg/dose q6-8h <i>caution if bleeding/GI issues</i> Morphine <ul style="list-style-type: none"> PO: 0.2-0.5 mg/kg/dose q4-6h SL/IV/SC: 0.05-0.2 mg/kg/dose q4-6h Infusion/CADD: 10-30 mcg/kg/hr titrate to response HYDROMorphone <ul style="list-style-type: none"> PO: 0.03-0.08 mg/kg/dose q4h IV/SC: 0.01-0.02 mg/kg/dose q2-4h Infusion/CADD: 0.003-0.005 mg/kg/hr (or 3-8 micrograms/kg/hr) titrate to response FentaNYL <ul style="list-style-type: none"> Transdermal patch: best used as an alternate route for pain already controlled on another opioid; should not be used to treat acute uncontrolled pain. Rule of thumb is 2mg PO morphine = 1mcg/hr fentanyl – thus a child needs to be on ~30mg of PO morphine daily before switching to patch. SL/IV/SC: 1-2 micrograms/kg/dose q30-60 min Infusion/CADD: 0.5-2 micrograms/kg/hr titrate to response Methadone (under the direction of a PPC specialist) <p><i>Adjuvants:</i></p> <ul style="list-style-type: none"> Radiotherapy (in consultation with a radiation oncologist)

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	<p>provide <u>REGULAR DOSING</u>, and supplement with PRN for breakthrough pain.</p> <p>If pain is refractory, or side effects are unmanageable (constipation, nausea, urinary retention, pruritus), consider opioid rotation. Refer to an opioid conversion table or a PPC specialist.</p>	<ul style="list-style-type: none"> Dexamethasone: 0.1-0.25 mg/kg/dose IV/PO/SC (max 8mg) Gabapentin: for neuropathic pain <ul style="list-style-type: none"> 5mg/kg/dose, start qhs and increase by 5mg/kg/day q3-4 days until effective or 60mg/kg/day TCA's: for neuropathic pain <ul style="list-style-type: none"> Amitriptyline: 0.2mg/kg PO qhs (10mg max), increase by 0.2mg/kg/day q4 days until effective or 1mg/kg/day or sedated Ketamine (under direction of PPC specialist) Topical lidocaine or capsaicin Bisphosphonates
Pruritus	<p>Can be a side effect of opioids due to their histamine releasing properties: usually resolves within a few days of treatment initiation or increased dosage. Some opioids result in less pruritus than others; may respond to opioid rotation (hydromorphone, fentanyl).</p>	<ul style="list-style-type: none"> Diphenhydramine: 1mg/kg q6h Hydroxyzine: 0.5mg/kg/dose PO QID Ondansetron: PO/SL/IV/SC: 0.15 mg/kg/dose q8h (weak evidence) Naloxone: Only effective for opioid-induced pruritus. May reduce analgesic effects. Recommend consulting with a PPC specialist prior to use.
Secretion Control	<p>If child is too weak to clear own secretions, reposition on side for postural drainage. Give frequent mouth care.</p> <p>Suctioning can cause irritation and increased secretions, and should be avoided if possible.</p> <p>Most effective treatment, with fewest side effects, is to reduce total fluid intake (via enteral tube, IV). Titrate to comfort.</p>	<ul style="list-style-type: none"> 1% ophthalmic Atropine: 1-3 drops q4h SL prn Glycopyrrolate: <ul style="list-style-type: none"> PO: 40-100 mcg/kg/dose q6-8h IV/SC: 4-10 micrograms/kg/dose q3-4h Scopolamine: <ul style="list-style-type: none"> IV/SC: 5-10 micrograms/kg q4-8h Transdermal patch: available in 1.5mg patches, can apply up to 3 at a time q72h <p>*Consider side effects: thickened, difficult to clear secretions, dry mouth and drowsiness</p>
Seizures	<p>Seizures at end-of-life can be very distressing, and aggressive management is most often appropriate.</p>	<p>Management strategy: benzo → benzo → phenobarbital (if intractable)</p> <ul style="list-style-type: none"> Lorazepam: <ul style="list-style-type: none"> SL/buccal: 0.05-0.1 mg/kg/dose IV/SC: 0.1mg/kg/dose Midazolam: <ul style="list-style-type: none"> SL: 0.2-0.5 mg/kg/dose (5-10mg max) IV/SC: 0.1-0.2 mg/kg/dose Phenobarbital: 20mg/kg IV load, followed by maintenance dose of 5mg/kg IV/PO OD. Can be given deep SC, but many children find it uncomfortable.

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Urinary Retention	<p>Consider looking for reversible causes (high dose opioids; spinal metastases/primary amenable to radiation).</p> <p>Having a warm bath and encouraging the child to pass urine in the water is often the most effective treatment for opioid induced retention.</p> <p>Consider opioid rotation.</p> <p>Catheterization may be necessary to relieve the discomfort of a full bladder.</p>	<p>It is recommended with the use of drugs at end of life that may cause urinary retention to have catheterization supplies in the event the child is unable to void and cause is not reversible.</p>