National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology™

Pediatric Cancer Pain

V.1.2007

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Pediatric Cancer Pain

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# Nursing
€ Pediatric oncology
£ Supportive Care including Palliative, Pain management Pastoral care and Oncology social work

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Pediatric Cancer Pain

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Clinical Trials: The NCCN believes that the best management for any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

To find clinical trials online at NCCN member institutions, click here: nccn.org/clinical_trials/physician.html

NCCN Categories of Consensus: All recommendations are Category 2A unless otherwise specified.

See NCCN Categories of Consensus

Summary of Guidelines Updates

Pediatric Cancer Pain

Summary of the Guidelines updates

Summary of changes in the 1.2007 version of the Pediatric Cancer Pain Guidelines from the 1.2006 version include:

- Comprehensive Pain Assessment section: "Comfort/function" was added to the assessment of patient and family goals (PEDP-1).
- Clinician issues/responsibilities: "Ensure adequate access to prescribed medications" was added (PEDP-4).
- Routine follow-up, Frequency at least every 3 months depending on: "Regulatory requirements" was added (PEDP-4).
- After goals of treatment are achieved, continue with routine follow-up is recommended (PEDP-4).
- Pain rating 7-10, Reassess at 15 min, Pain rating increased or unchanged: Repeat same dose or increase by 20-"50% depending on opioid history and clinical circumstances" was added (PEDP-5).
- Associated symptoms due to the effects of pain treatment was added (PEDP-B).
- Additional nonpharmacologic approach that includes, Preparatory play (when age appropriate): "Consult with a child life specialist" was added (PEDP-C).
- Topical local anesthetics creams (containing lidocaine, prilocaine, tetracaine) applied to intact skin "with sufficient time for effectiveness as per package insert" was added (PEDP-C).
- General principles: "Switch from fixed-combination opioids to single-entity opioids when acetaminophen dose > 4 g/d" was reworded to "Switch from acetaminophen/opioid combination to single-entity opioids when acetaminophen dose 75 mg/kg/d to a maximum of 3 g/d" (PEDP-D 1 of 4).
- Oxycodone was added as a choice to the table for Pain 7-10 rating (PEDP-D 1 of 4).
- Recommended initial fentanyl transdermal system dose based upon daily morphine dose: A fentanyl 12 mcg/hr dose based upon a 45-59 mg/d morphine dose was added (PEDP-D 4 of 4).
- Maximum doses were added to ondansetron and lorezapam and consideration of other drugs in the ondansetron class was added. The lorazepam dose was changed from 0.04-0.08 mg/kg IV or PO every 6 h to 0.02-0.04 mg/kg IV or PO every 6 h (PEDP-E).
- Neuropathic pain, For patients < 50 kg: (PEDP-F)
  - A dose range of 5-7 mg/kg/dose PO TID is now given for gabapentin and gradual increase was clarified as every 3 days.
  - Consider methadone was moved to the second option.
  - Amitriptyline is given as an example of a tricyclic antidepressant.
  - Lidocaine patch or cream is given as an example of a topical local anesthetic for zoster pain.
- Support: "Provide information regarding availability of Palliative Care support" was added as a new support recommendation (PEDP-G).
- The maximum dose of acetaminophen was changed from "100 mg" to "75 mg" and the maximum dose of 30 mg of Ketorolac was added (PEDP-I).
- Specialty consultations: Palliative care consultation was added (PEDP-J).

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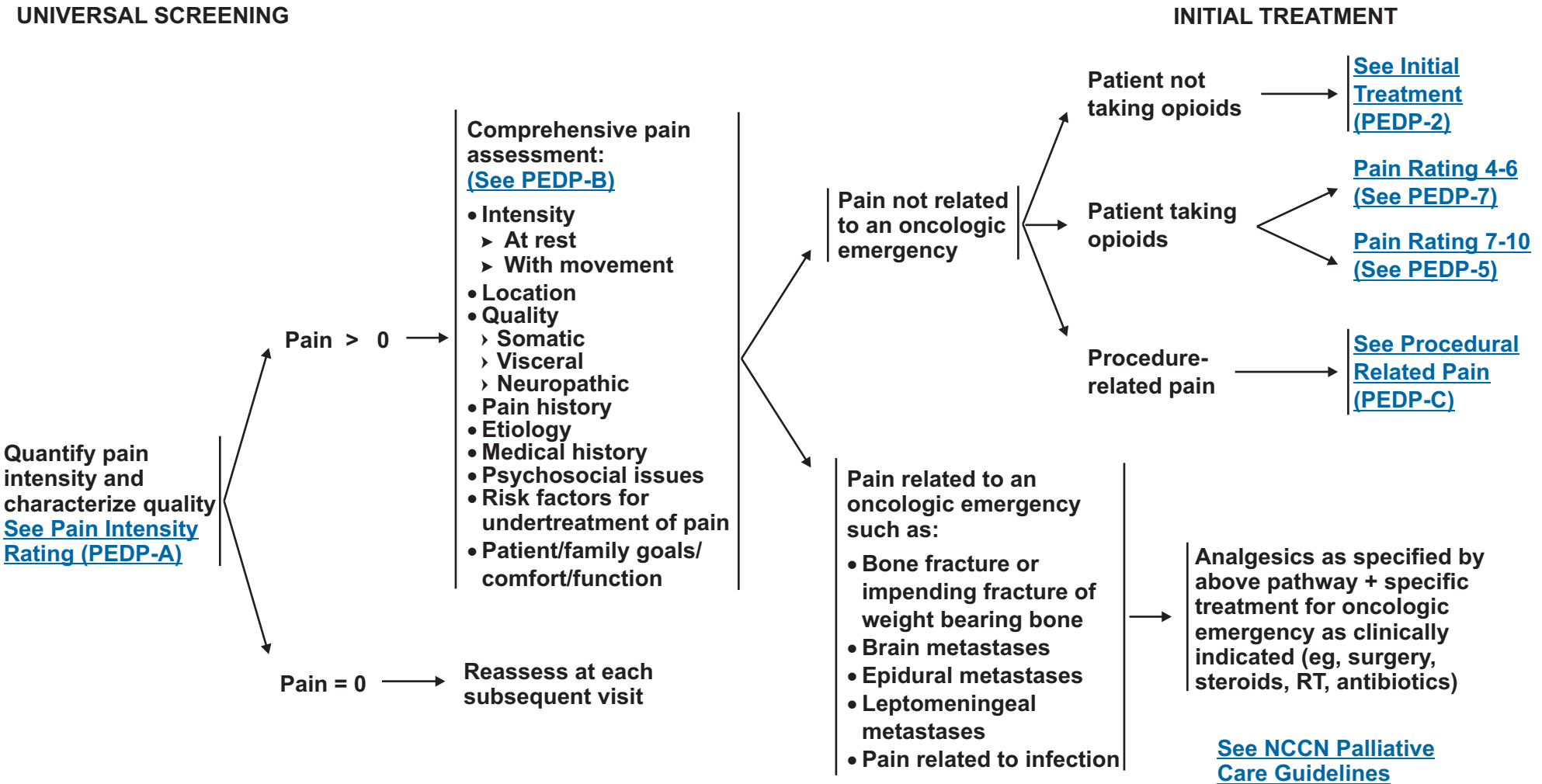
Pediatric Cancer Pain



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Pediatric Cancer Pain

To quantify pain intensity, See Pain Intensity Rating (PEDP-A)

INITIAL TREATMENT

Pain 7-10 (pain emergency) →
- Rapidly titrate short-acting opioid[a]
  - › Begin bowel regimen[b]
- Antinausea medications as needed[b]
- Coanalgesics as needed[c]
- Provide psychosocial support[d]
- Begin educational activities[e]

→ See Guideline for Rapid Titration (PEDP-5) → Repeat comprehensive reassessment within 24 h

Pain 4-6 →
- Titrate short-acting opioid[a]
  - › Begin bowel regimen[b]
- Antinausea medications as needed[b]
- Coanalgesics as needed[c]
- Provide psychosocial support[d]
- Begin educational activities[e]

→ See Guideline for Rapid Titration (PEDP-5) or See Guideline for Slower Titration (PEDP-7) → Repeat comprehensive reassessment within 24-48 h

Pain 1-3 →
- Consider NSAID or acetaminophen without opioid if patient is not on analgesics[f]

  or
- Consider titrating short-acting opioid[a]
  - › Begin bowel regimen[b]
- Antinausea medications as needed[b]
- Coanalgesics as needed[c]
- Provide psychosocial support[d]
- Begin educational activities[e]

→ See Guideline for Slower Titration (PEDP-7) → Repeat comprehensive reassessment within 24-72 h

Repeat comprehensive reassessment within 24 h / 24-48 h / 24-72 h → See Subsequent Treatment (PEDP-3)

[a] See Opioid Prescribing, Titration, and Maintenance (PEDP-D).
[b] See Management of Opioid Side Effects (PEDP-E).
[c] See Specific Pain Problems (PEDP-F).
[d] See Psychosocial Support (PEDP-G).
[e] See Patient and Family Education (PEDP-H).
[f] See NSAID and Acetaminophen Prescribing (PEDP-I).

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SUBSEQUENT TREATMENT

- Consider conversion to sustained-release agent with rescue medications as appropriate[a]
- Reassess and modify regimen to minimize side effects[b]
- Coanalgesics as needed[c]
- Provide psychosocial support[d]
- Provide educational activities[e]

Pain 7-10 →
- Reevaluate opioid titration[a]
- Reevaluate working diagnosis
- Consider specific pain problems[c]
- Consider specialty consultations[g]

See Guideline for Rapid Titration (PEDP-5)
See Guideline for Slower Titration (PEDP-7)
See Universal Screening (PEDP-1)

→ Repeat comprehensive reassessment within 24 h

Pain 4-6 →
- Continue opioid titration[a]
- Consider specific pain problems[c]
- Consider specialty consultations[g]

See Guideline for Rapid Titration (PEDP-5)
See Guideline for Slower Titration (PEDP-7)

→ Repeat comprehensive reassessment within 24-48 h

Pain 1-3 → Reassess pain every visit until comfortable, then every week

→ See Follow-up (PEDP-4)

To quantify pain intensity, See Pain Intensity Rating (PEDP-A)

[a] See Opioid Prescribing, Titration, and Maintenance (PEDP-D).
[b] See Management of Opioid Side Effects (PEDP-E).
[c] See Specific Pain Problems (PEDP-F).
[d] See Psychosocial Support (PEDP-G).
[e] See Patient and Family Education (PEDP-H).
[g] See Specialty Consultations (PEDP-J).

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Pediatric Cancer Pain

FOLLOW-UP

Clinician issues/responsibilities

- Routine follow-up
  - Frequency at least every 3 months depending on:
    - Patient condition
    - Institutional standards
    - Regulatory requirements
- Written follow-up plan
- Ensure adequate access to prescribed medications
- Instruct the patient on the importance of the following:
  - Adherence to medication plan
  - Maintain clinic appointments
  - Contact physician if pain worsens
  - Follow documented plan[e]
- Process realistic goals, revise and review
- Address system barriers
  - Social services
- On-call/prn availability

Goals of treatment ACHIEVED:
- Comfort
- Function

→ Continue routine follow-up

Goals of treatment NOT achieved:
- Comfort
- Function

→ See Universal Screening (PEDP-1)

[e] See Patient and Family Education (PEDP-H).

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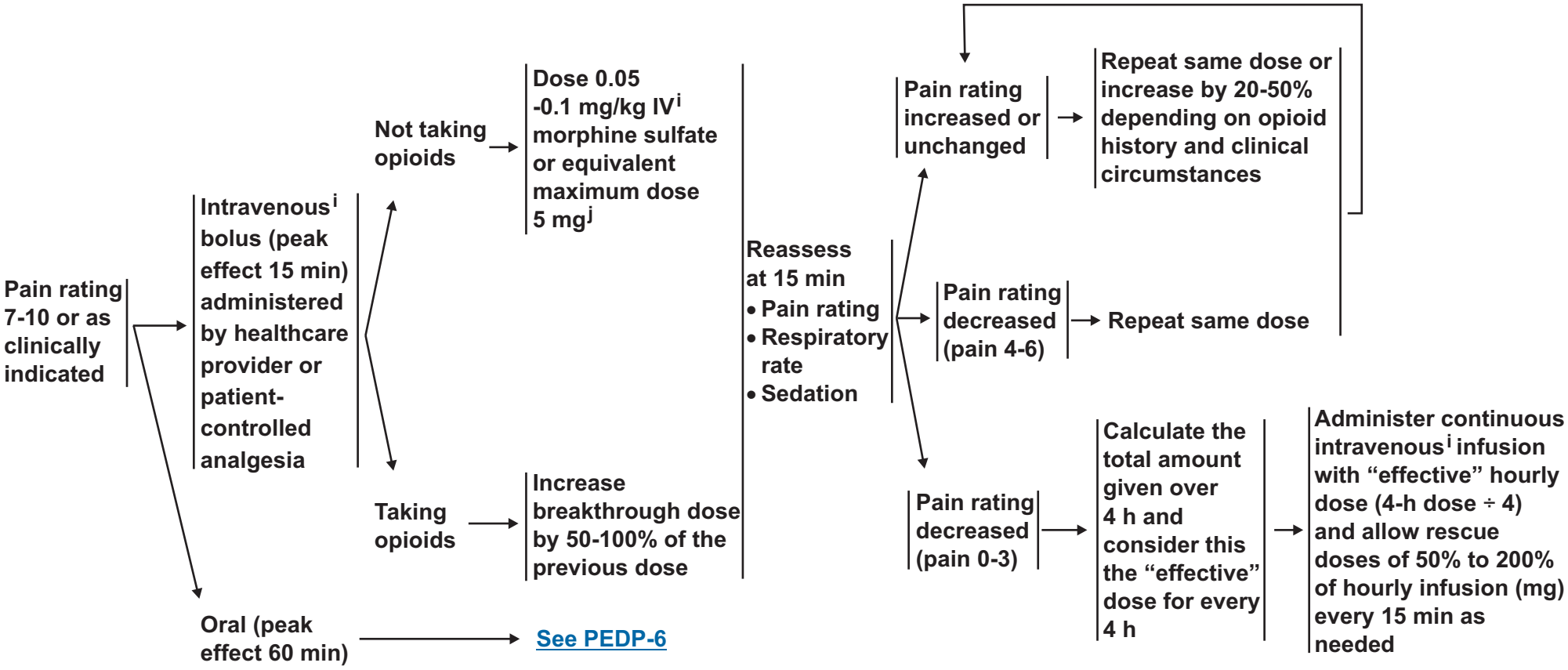
Pediatric Cancer Pain

To quantify pain intensity, See Pain Intensity Rating (PEDP-A)

RAPID TITRATION OF SHORT-ACTING OPIOIDS[h]

(Monitor respiratory rate and sedation, consider monitoring oxygen saturation and other vital signs)



[h] Consider age and weight of patient. If patient is > 50 kg see NCCN Adult Pain Guideline, for infants ≤ 10 kg or < 1y initial dose ¼ - ½ weight scaled dosage recommended and titrate upward.

[i] Subcutaneous can be substituted for intravenous, however subcutaneous route delays onset of effect by up to 30 minutes.

[j] Respiratory depression related to opioid- If respiratory problem or acute change in mental status consider naloxone rescue. Dilute one ampule of naloxone (0.4 mg) in 10 mL NS. Give 0.5 mL (0.02 mg) every 30-60 seconds until improvement in symptoms is noted. Be prepared to repeat this process (the half-life of some opioids is longer than that of the naloxone). If the patient is not responsive within 10 minutes, consider another reason for the change in neurological status.

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RAPID TITRATION OF SHORT-ACTING OPIOIDS (continued from previous page)[h]

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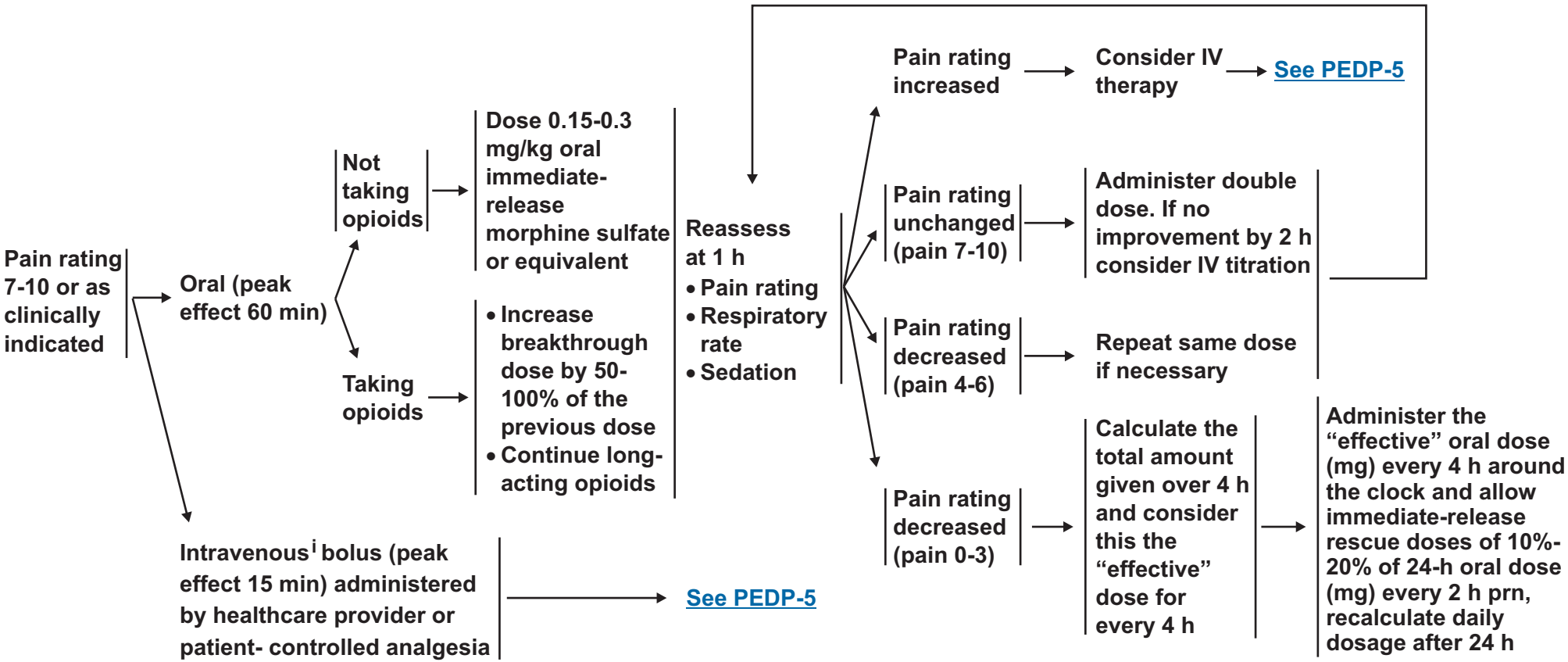

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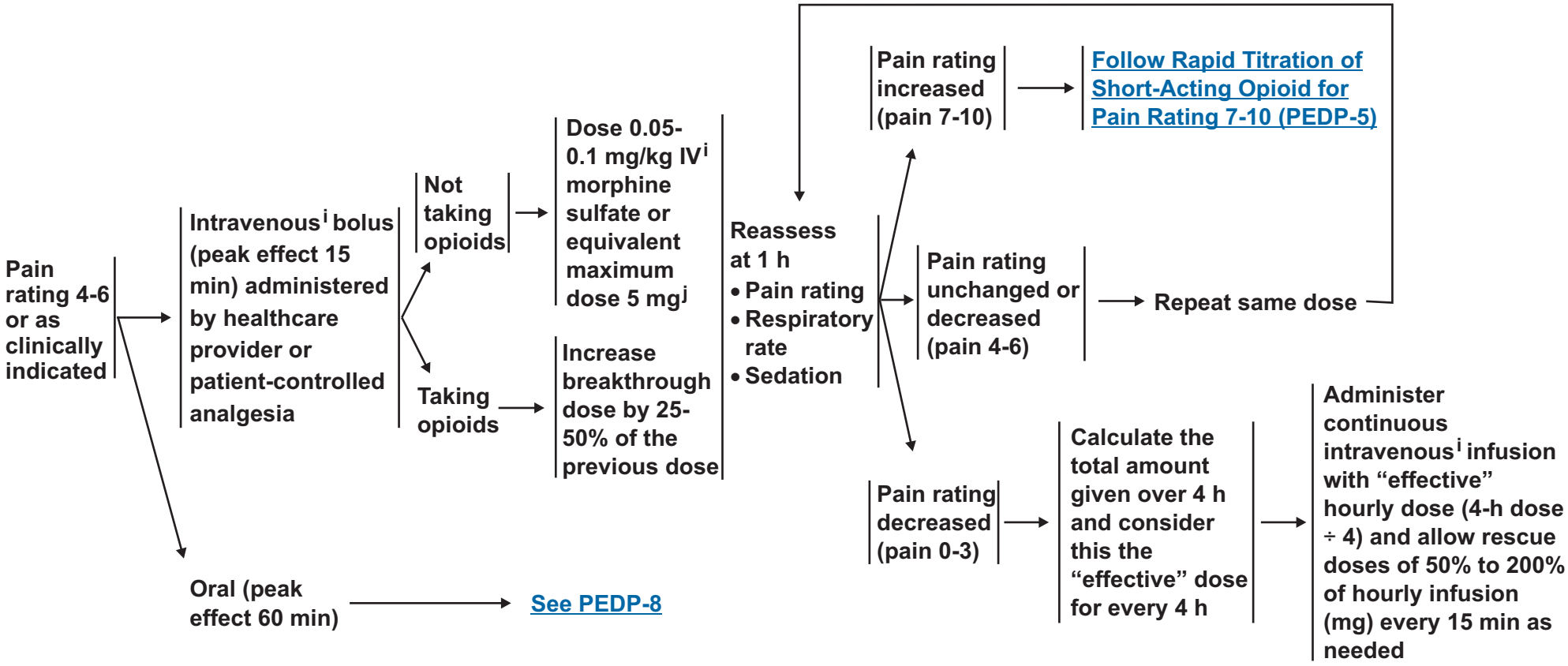
SLOWER TITRATION OF SHORT-ACTING OPIOIDS[h]

(Monitor respiratory rate and sedation, consider monitoring oxygen saturation and other vital signs)



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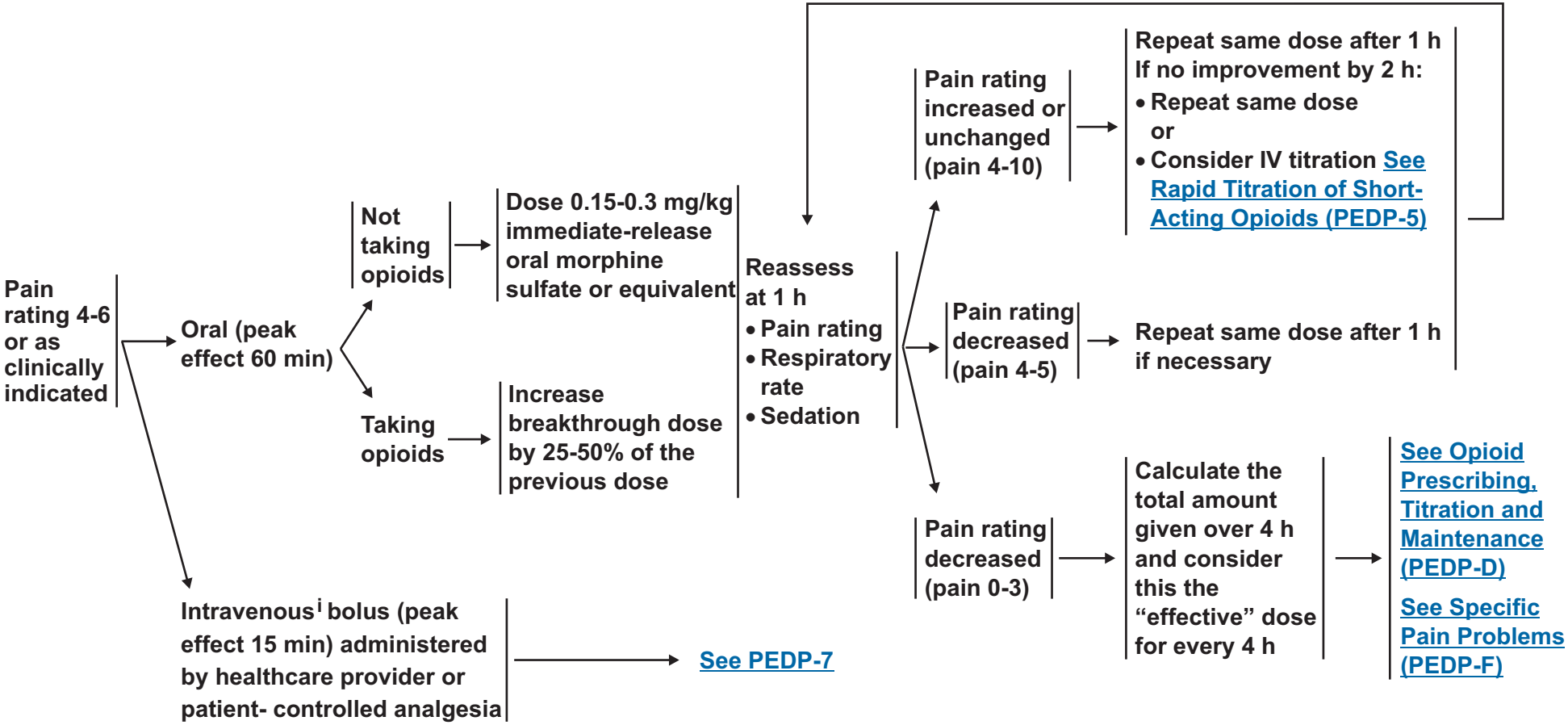

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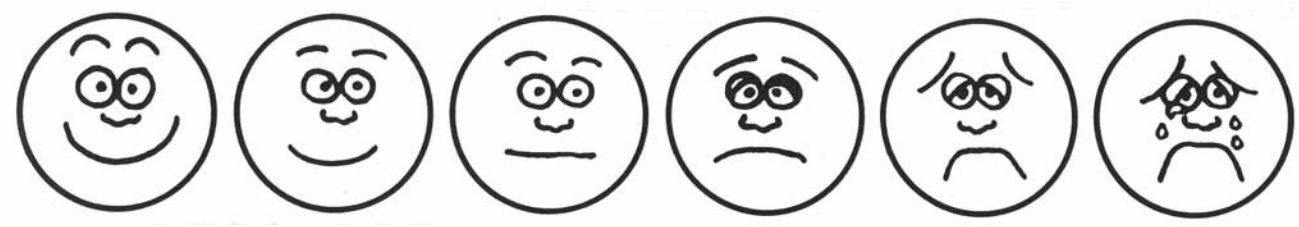
PAIN INTENSITY RATING (1 of 3)

Table 1: Wong-Baker FACES Pain Rating Scale Recommended use for persons age 3 years and older.



0	2	4	6	8	10
NO HURT	HURTS A LITTLE BIT	HURTS A LITTLE MORE	HURTS EVEN MORE	HURTS A WHOLE LOT	HURTS WORST

Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. FACE 0 is very happy because he doesn't hurt at all. FACE 2 hurts just a little bit. FACE 4 hurts a little more. FACE 6 hurts even more. FACE 8 hurts a whole lot. FACE 10 hurts as much as you can imagine, although you don't have to be crying to feel this bad. Ask the person to choose the face that best describes how he is feeling.

Brief word instructions: Point to each face using the words to describe the pain intensity. Ask the child to choose face that best describes own pain and record the appropriate number.

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PAIN INTENSITY RATING (2 of 3)

Table 2: FLACC Scale: Rating scale is to be used for children less than 3 years of age or other patients who cannot self-report.

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to distractable	Difficult to console or comfort

Each of the five categories (F) Face, (L) Legs, (A) Activity, (C) Cry, (C) Consolability is scored from 0-2, resulting in a total range of 0-10.

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PAIN INTENSITY RATING (3 of 3)

Table 3: Numerical Rating Scale

Numerical rating scale: Use for patients over 12 years of age who understand numerical values.

- Verbal: "How much pain are you having?" from 0 (no pain) to 10 (worst imaginable pain)
- Written: "Circle the number that describes how much pain you are having."

0 1 2 3 4 5 6 7 8 9 10
No pain Worst imaginable pain

Categorical scale:

"How much pain are you having?"

None (0), Mild (1–3), Moderate (4–6), or Severe (7–10)

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COMPREHENSIVE PAIN ASSESSMENT

History

- Pain
  - Intensity (See Pain Intensity Rating, PEDP-A)
    - At rest
    - With movement
  - Location
  - Quality
    - Somatic: pain in skin, muscle, bone described as aching, stabbing, throbbing, pressure
    - Visceral: pain in organs or viscera described as gnawing, cramping, aching, sharp
    - Neuropathic: pain caused by nerve damage described as sharp, tingling, burning, shooting
  - History: onset, duration, course, aggravating, associated symptoms, alleviating factors, response to current and prior treatment including reasons for discontinuing
  - Etiology
    - Cancer
    - Cancer therapy or procedures
    - Coincidental or noncancer
  - Response to current therapy
    - Pain relief and side effects
    - Patient adherence to medication plan
- Medical
  - Current medications including prescribed, over the counter, complementary and alternative therapies
  - Oncologic
  - Other significant medical illnesses
- Level of function
  - Including school attendance
- Psychosocial
  - Patient distress
  - Family and other support
  - Psychiatric history including current or prior history of substance abuse in patient and family members
  - Special issues relating to pain
    - Meaning of pain for patient/family
    - Patient/family knowledge and beliefs surrounding pain
    - Cultural beliefs toward pain
    - Spiritual or religious considerations
- Risk factors for undertreatment of pain
  - Pediatric communication barriers, history of substance abuse, neuropathic pain, minorities, female, cultural factors, and parental issues

Physical examination

Relevant laboratory and imaging studies

Associated Symptoms

- Effects of pain treatment
  - Fatigue
  - Mental clouding
  - Sleep disturbances
  - Somnolence

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Pediatric Cancer Pain

PROCEDURE-RELATED PAIN and ANXIETY

Consistent adequate analgesia for all pain-related procedures and anxiety is critical. Intervention may be multi-modal and include one or more of the following techniques as appropriate for the individual child.

Procedure-related pain (i.e., port access, BMA, LP, LPIT, skin biopsies, bone marrow biopsies etc.)

- **Local anesthetics such as:**
  - **Topical local anesthetics creams (containing lidocaine, prilocaine, tetracaine) applied to intact skin with sufficient time for effectiveness as per package insert.**
  - **Recently developed physical approaches (ultrasound, cutaneous warming, laser or jet injection) may accelerate the onset of cutaneous anesthesia.**
  - **Ionophoretic devices to provide lidocaine delivery through the skin without needles in 10-15 minutes.**
  - **Subcutaneous administration of lidocaine with a 27 g needle.**
- **Administration of sedatives/analgesics/general anesthesia by trained personnel.**
- **Additional nonpharmacologic approach that includes:**
  - **Education**
  - **Preparatory play (when age appropriate). Consult with a child life specialist.**
  - **Relaxation training (progressive muscle relaxation, deep breathing).**
  - **Guided imagery and hypnosis for appropriate patients by trained personnel.**

Providing all these techniques prior to the procedure is ideal as it allows the patient and their family the time they may need to assimilate all of the information, ask questions, and master the techniques while reducing anticipatory anxiety.

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Pediatric Cancer Pain

ANALGESIC PRESCRIBING, TITRATION AND MAINTENANCE (1 of 4)

I. GENERAL PRINCIPLES

- The appropriate dose is the dose that relieves the patient's pain throughout its dosing interval without causing unmanageable side effects.
- Calculate increase based upon total opioid dose (Around the clock/scheduled and as needed) taken in the previous 24 h.
- Increase both around the clock and as needed doses. The rapidity of dose escalation should be related to the severity of the symptoms. See PEDP-5 for Rapid Titration and PEDP-7 for Slower Titration.
- Switch from acetaminophen/opioid combination to single-entity opioids when acetaminophen dose 75 mg/kg/d to a maximum of 3 g/d
- If patient is experiencing unmanageable side effects and pain is < 4, consider downward dose titration by approximately 25% and reevaluate.
- Equilibrium achieved in about 5 half lifes.

To quantify pain intensity, See Pain Intensity Rating (PEDP-A)

II. INITIAL THERAPY FOR OPIOID-NAIVE CHILDREN USING THE FACES OR FLACC SCALE (FOR PATIENTS ≤ 50kg)

Faces/Flacc Pain Scale Rating	Opioid	Oral (per dose)[1]	IV (per dose)[1]
Pain 7-10 See PEDP-D (4 of 4) for PCA dosing)	Morphine	0.3 mg/kg every 3-4 h	0.03-0.06 mg/kg every h (may be given continuous infusion) or 0.1 mg/kg every 3-4 h
	Oxycodone	0.1-0.2 mg/kg every 3-4 h	N/A
Pain 4-6 See PEDP-D (4 of 4) for PCA dosing)	Acetaminophen/opioid combination Consider NSAID regimens	See NSAID and Acetaminophen Prescribing (PEDP-I)	N/A
	Oxycodone[2]	0.1 mg/kg every 3-4 h	N/A
	Morphine	0.15 mg/kg every 3-4 h	0.01-0.02 mg/kg every h (may be given continuous infusion) or 0.05 mg/kg every 3-4 h
Pain 0-3	Acetaminophen Consider NSAID regimens	See NSAID and Acetaminophen Prescribing (PEDP-I)	N/A
	Codeine[2,3]	0.5-1 mg/kg every 4 h	N/A
	Oxycodone[2]	0.1 mg/kg every 3-4 h	N/A

[1] For patients > 50 kg, use adult dosing recommendations. See NCCN Adult Cancer Pain Guideline. For infants < 10 kg, initially give ¼ to ½ the weight scaled dosage recommended and titrate upward.

[2] May be combined with other nonopioid agents which have a maximum dose/day.

[3] May not be metabolized in 10-15% of adult patients and up to 35% in pediatric population and therefore will not provide effective analgesia.

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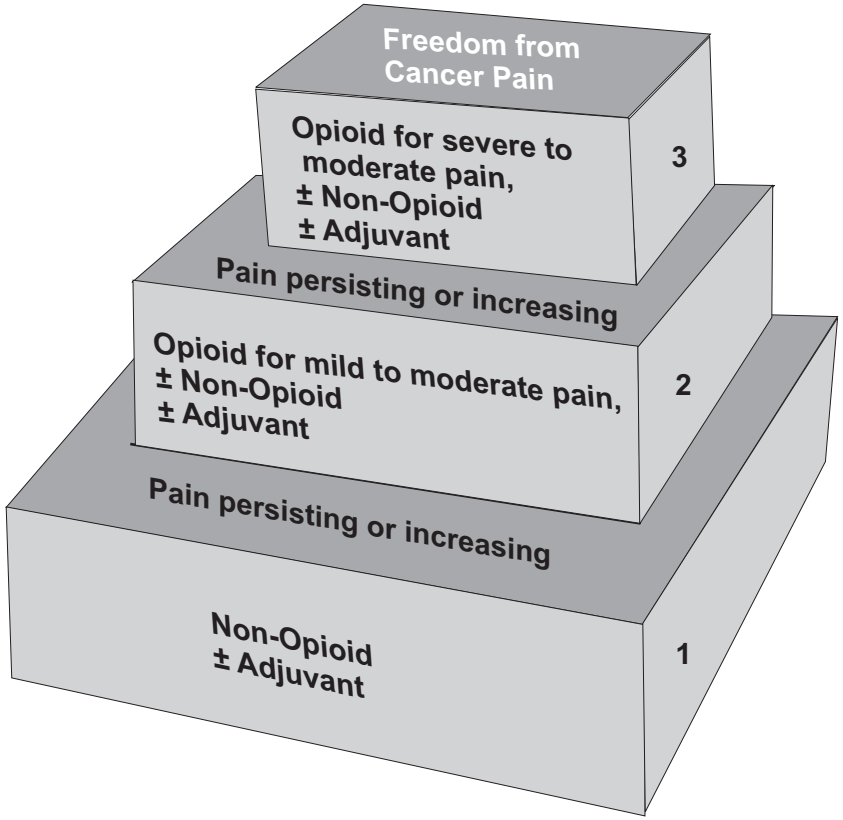
ANALGESIC PRESCRIBING, TITRATION AND MAINTENANCE (2 of 4)

III. WHO'S PAIN LADDER

WHO has developed a three-step "ladder" for cancer pain relief. If pain occurs, there should be prompt oral administration of drugs in the following order: nonopioids (aspirin and acetaminophen); then, as necessary, mild opioids (codeine); then strong opioids such as morphine, until the patient is free of pain. To maximize effectiveness, additional drugs - "adjuvants" - should be used. To maintain freedom from pain, drugs should be given "by the clock", that is every 3-6 hours, rather than "on demand". This three-step approach of administering the right drug in the right dose at the right time is inexpensive and 80-90% effective. Surgical intervention on appropriate nerves may provide further pain relief if drugs are not completely effective.

http://www.who.int/cancer/palliative/painladder/en/



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ANALGESIC PRESCRIBING, TITRATION and MAINTENANCE (3 of 4)

IV. ORAL AND PARENTAL DOSE EQUIVALENTS OF OPIOIDS FOR PATIENTS ≤ 50 KG

Opioid	Oral (Per Dose)[1]	IV (Per Dose)[1]
Codeine[2,3]	0.5-1 mg/kg every 4 h	NA
Hydrocodone[4]	0.1-0.2 mg/kg every 4 h	NA
Oxycodone[2]	0.1 mg/kg every 3-4 h	NA
Morphine	0.3 mg/kg every 3-4 h	0.1 mg/kg every 3-4 h
Hydromorphone	0.02-0.1 mg/kg every 3-4 h	0.015 mg/kg every 4 h
Methadone[5]	*	*
Fentanyl	**	0.001 mg/kg every 30-60 min

Not recommended

Propoxyphene **Mixed agonist-antagonists**
Meperidine **Partial agonist**
Placebos

*Caution is needed with application of this drug and monitoring is required. Due to drug to drug interactions, metabolic issues, potential increased potency, accumulation and cardiac toxicity; consider consultation with a pain management specialist.

**Transmucosal fentanyl is available

V. EQUIANALGESIC TABLE:

This table represents the equianalgesic dosages to be used when changing routes or changing between opioids. Note: better pain control may be achieved by changing from one opioid to another opioid due to an incomplete cross tolerance. Therefore, when changing between opioids, start at 80% of the equianalgesic dose to avoid unacceptable side effects or overdose.

Drug	Equianalgesic dose (doses in mg)	
	IV	PO
Morphine	10	30
Hydromorphone	1.5	7.5
Fentanyl	0.1-0.2	not available
Oxycodone	not available	15-30

[1] For patients > 50 kg, use adult dosing recommendations. See NCCN Adult Cancer Pain Guideline. For infants < 10 kg, initially give ¼ to ½ the weight scaled dosage recommended and titrate upward.

[2] May be combined with other nonopioid agents which have a maximum dose/day.

[3] May not be metabolized in 10-15% of adult patients and up to 35% in pediatric population and therefore will not provide effective analgesia.

[4] Not available as single agent; will be combined with other nonopioid agents which have a maximum dose/day.

[5] Equivalency ratios comparing morphine (and other opioids) to methadone are dose-dependent. This ratio may range from 1:1 at low doses of oral morphine to as high as 15:1 for patients receiving oral morphine in excess of 300 mg per day. Because of its long half-life, high potency, and individual variations in pharmacokinetics, methadone should be started at lower doses and titrated upwards carefully with provision of adequate breakthrough pain medications during the titration period.

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ANALGESIC PRESCRIBING, TITRATION and MAINTENANCE (4 of 4)

IV. PRINCIPLES OF MAINTENANCE OPIOID THERAPY

- Consider converting from short-acting opioids to sustained release opioids for control of chronic persistent pain when 24 h opioid requirement is stable:
  - Extended-release morphine sulfate tablets every 8-24 h depending on brand. Capsules every 8-24 h
  - Extended-release oxycodone hydrochloride tablets every 8-12 h
  - Transdermal fentanyl delivery system every 48-72 h

- Provide rescue doses of short-acting opioids for pain not relieved by sustained release opioids including acute exacerbations of pain, activity, or position related pain or pain at the end of dosing interval:
  - Use short-acting form of sustained release opioid whenever possible
  - Allow immediate-release rescue doses of 10% to 20% of 24-h oral dose (mg) every 1 h prn
  - Transdermal patch see manufacturer recommendation and Fentanyl Patch to Oral Morphine Conversion Table below.

Increase dose of sustained release opioid if patient persistently needs doses of as needed opioids or when dose of around the clock opioid fails to relieve pain at peak effect or at end of dose.

For PCA administration in opioid naive children, start with morphine 0.02 mg/kg/h with boluses of 0.02 mg/kg every 15 minutes or equianalgesic doses of hydromorphone or fentanyl. Titrate to desired effect. See PEDP-D (3 of 4) for dose equivalents of other opioids.

V. RECOMMENDED INITIAL FENTANYL TRANSDERMAL SYSTEM DOSE BASED UPON DAILY MORPHINE DOSE

Oral 24-hour Morphine (mg/day)	Fentanyl dose (mcg/hr)
45-59	12
45-134	25
135-224	50
225-314	75
315-404	100
405-494	125
495-584	150
585-674	175
675-764	200
765-854	225
855-944	250
945-1034	275
1035-1124	300

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Pediatric Cancer Pain

MANAGEMENT OF OPIOID SIDE EFFECTS - GENERAL PRINCIPLES (1 of 3)

Constipation

- Preventive measures
  - Prophylactic medications
  - Increase fluids
  - Increase dietary fiber
  - Exercise, if appropriate
    - Stool softener
    - Increase dose of laxative when increasing dose of opioids
- If constipation develops
  - Assess for cause and severity of constipation
  - Rule out obstruction
  - Treat other causes
  - Consider coanalgesic to allow reduction of the opioid dose
- If constipation persists
  - Reassess for cause and severity of constipation
  - Check for impaction

Nausea

- Preventive measures
  - Make antiemetics available with opioid prescription
- If nausea develops
  - Assess for other causes of nausea (e.g., constipation, central nervous system pathology, chemotherapy, radiation therapy, hypercalcemia)
  - If nausea remains on the prn regimen, administer antiemetics around the clock for 1 wk, then change to prn
- If nausea persists for more than 1 wk
  - Reassess cause and severity of nausea
  - Change opioid
  - Consider coanalgesic to allow reduction of the opioid dose
- If nausea persists after a trial of several opioids and above measures
  - Reassess cause and severity of nausea

Sedation

- Preventive measures
  - Initiate opioids at suggested starting doses, lower doses for patients < 50 kg
  - Consider coanalgesic to allow reduction of the opioid dose
- If sedation develops and persists for more than 1 wk after initiating opioids
  - Assess for other causes of sedation (e.g., CNS pathology, other sedating medications, hypercalcemia, dehydration, sepsis, hypoxia, hypercapnia)
  - Decrease the dose of opioid if pain control can be maintained at a lower dose
  - Consider changing the opioid
  - Consider a lower dose of opioid given more frequently, to decrease peak concentrations
- If sedation persists despite several changes of opioids and the above measures
  - Reassess cause and severity of sedation
  - Consider intrathecal or epidural opioids, or nerve blocks

Delirium

- Assess for other causes of delirium (e.g., hypercalcemia, CNS, metastases, other psychoactive medications, etc.)
- Consider changing the opioid
- Consider coanalgesic to allow reduction of the opioid dose

Motor and Cognitive Impairment

- Studies have shown that stable doses (> 2 wk) are not likely to interfere with psychomotor and cognitive function

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Pediatric Cancer Pain

MANAGEMENT OF OPIOID SIDE EFFECTS - FOR CHILDREN < 50 kg (2 of 3)

Constipation

- **Prevent with stool softener/laxative combination, i.e., senna (10-20 mg/kg/dose of senna) or casanthranol + docusate (1 capsule or 5-15 ml syrup*).**
- **If constipation develops, titrate the dose of senna or casanthranol + docusate (1 capsule or 5-15 ml syrup*) as needed with the addition of magnesium citrate (< 6 years of age, 2-4 ml/kg; 6-12 years of age, 100-150 ml) or Golytely (25-40 ml/kg/h) until constipation relieved.**
- **If constipation persists, consider use of naloxone at a dose of 3 mg PO TID up to a maximum of 12 mg TID.**

*One capsule contains docusate sodium 100 mg + casanthranol 30 mg; syrup contains docusate sodium 60 mg + casanthranol 30 mg/15ml with alcohol 10%.

Name of Drug	Preparation	Dose	Maximum Dose
Senna	Granules	1 tsp at bedtime PO	2 tsp BID
	Syrup	5-15 mL/day/PO	30 mL
	Tablets	1-2 tabs/day PO	2 tabs BID
Bisacodyl	Tablets	5-10 mg PO at bedtime	
	Suppository	5 mg (½ suppository) 10 mg (1 suppository)	For < age 2 y For > age 2 y

Type of Laxative	Name	Age	Recommended Dose/Day
Saline	Mg citrate	< 6 6-12 ≥ 12	2-4 mL/kg PO* 100-150 mL PO 150-300 mL PO
	Mg hydroxide	< 2 2-5 6-12 ≥ 12	0.5 mL/day PO 5-15 mL PO* 5-30 mL PO* 30-60 mL PO*
	Na Phosphate/ Biphosphate enema	2-12 > 12	2.25 oz pediatric enema One 4.5 oz enema
Lubricant: Mineral oil (avoid PO at bedtime if patient is non-ambulatory or has compromised swallowing due to risk of aspiration)		5-11 ≥ 12 2-11 >12	5-15 mL PO* 15-45 mL PO* 30-60 mL rectally 60-150 mL retention enema
Surfactant/ stool softener	Docusate (give in 1-4 divided doses)	< 3 3-6 6-12 > 12	10-40 mg PO 20-60 mg PO 40-150 mg PO 50-400 mg PO
Miscellaneous	Glycerin	> 6	1 infant suppository, 1-2 x or 2-5 mL as an enema
		≤ 6	1 adult suppository 1-2x or 5-15 mL as an enema
	Lactulose (can be diluted in water, juices, milk)	Child Adult	7.5 mL PO after breakfast 15-30 mL PO up to a max of 60 mL
	Polyethylene glycol (mix in 4-8 oz of fluid)		½ to 1 packet (17gms) PO every day up to TID dosing

* May be given in single or divided doses

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MANAGEMENT OF OPIOID SIDE EFFECTS - FOR CHILDREN < 50 kg (3 of 3)

Nausea

- If nausea develops consider
  - Promethazine 0.25-0.5 mg/kg/dose IV or PO every 4-6 h PRN
  - Diphenhydramine 0.5-1 mg/kg/dose IV or PO every 4-6 h PRN
  - Ondansetron (5HT-3 inhibitor) IV or PO, 0.15 mg/kg/dose TID, maximum 8 mg/dose or other drugs of this class
  - Lorazepam 0.02-0.04 mg/kg IV or PO every 6 h, maximum 2 mg/dose

Sedation

- Consider methylphenidate 0.3-0.6 mg/kg/dose, maximum single dose of 20 mg; maximum daily dose 20 mg TID.
  - A reasonable starting dose for patients > 6 years of age is 5 mg at breakfast and repeat 5 mg at lunch. It may be given TID, however do NOT give the last dose after 6 pm to allow the patient to fall asleep at a reasonable hour. Titrate upward as needed.
  - For patients 3-6 years of age, this medication is not formally recommended, but for rare cases when necessary 2.5 mg/dose may be reasonable to try.

Pruritus

- Assess for other causes (other medications etc)
- Consider antihistamines such as diphenhydramine 0.5-1 mg/kg/dose IV or PO every 6 h or promethazine 0.25-0.5 mg/kg/dose IV or PO every 6 h or Nalbuphine 0.01-0.02 mg/kg/dose every 6-8 h prn IV
- Consider changing to another opioid if symptomatic management has failed.
- Consider continuous infusion of naloxone 0.25 mcg/kg/h and titrate up to 1 mcg/kg/h for relief of pruritus without decreasing effectiveness of the analgesic.

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Pediatric Cancer Pain

SPECIFIC PAIN PROBLEMS

Pain associated with inflammation - Trial of NSAIDs or glucocorticoids

Bone pain without oncologic emergency (i.e., epidural cord compression or impending fracture):

- Trial of NSAIDs or opioids
- Local bone pain: consider local radiation therapy or nerve block (e.g., rib pain)
- Diffuse bone pain: consider trial of bisphosphonates (no data for pediatrics), hormonal or chemotherapy for responsive tumors, glucocorticoids and/or systemic administration of radioisotopes in selected patients
- Consider physical medicine evaluation (See Specialty Consultations, PEDP-J)
- For resistant pain, consider anesthetic procedure (nerve blocks, spinal opioids and anesthetics), orthopedic, or neurosurgical approaches (See Specialty Consultations, PEDP-J)

Nerve compression or inflammation - Trial of glucocorticoids

Neuropathic pain (burning, shooting or tingling)

- For patients ≥ 50 kg: See NCCN Adult Cancer Pain Guidelines
- For patients < 50 kg:
  - Gabapentin 5-7 mg/kg/dose PO TID; increase gradually (every 3 days) to 50 mg/kg/day for children under 12 y or 70 mg/kg/day for children 12 y or older.
  - Consider methadone
  - Tricyclic antidepressant, amitriptyline, 0.1 mg/kg/dose each night; increase by doubling the dose every 3-5 days to a maximum dose of 1 mg/kg.
  - Consider pressure stocking or gloves for pain of the legs, feet, hands, or arms.
  - Topical local anesthetic (lidocaine patch or cream) for zoster pain.
  -

Painful lesions that are likely to respond to antineoplastic therapies:

- Consider trial of radiation, hormones, or chemotherapy
- For severe refractory pain or eminently dying. See NCCN Palliative Care Guideline

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Pediatric Cancer Pain

PSYCHOSOCIAL SUPPORT

- **Support**
  - Provide emotional support to patients and families that acknowledges the pain is a problem to be addressed.
  - Assist in accessing appropriate treatment.
  - State that you will work together with the patient and family as part of the team to address the pain problem.
  - Describe the plan of action to be taken and when results can be expected.
  - Express your commitment to staying available until the pain is better managed.
  - Verbally repeat your concern and the plan of action to be taken.
  - Inform patient and family that there is ALWAYS something else that can be done to try to adequately manage pain and other noxious symptoms.
  - Inform patient and family that emotional reactions to pain are normal and are evaluated and treated as part of pain treatment.
  - Provide information regarding availability of Palliative Care support.

  - Skills training
  - Teach coping skills to control emotional responses, provide pain relief, enhance a sense of personal control, and refocus psychic energy on optimizing quality of life.
  - Coping skills for pain emergency include breathing exercises, distraction techniques, hypnosis for procedure related pain and cognitive coping statements to encourage assertiveness and to maximize comfort.
  - Coping skills for chronic pain (not pain emergency) include all of the above plus relaxation techniques, guided imagery, art therapy, pet therapy, recreational therapy, music therapy or music for enjoyment, graded task assignments, and hypnosis to maximize function.
  - Educate patient and family that pain/palliative care management is a team effort. Members of the team include: oncologist, nurse, anesthesiologist, neurologist, psychologist, social worker, psychiatrist, physical therapist, child life specialist and spiritual leader.
    See Patient and Family Education (PEDP-H)

- **Additional Strategies**
  - The parent or other family member can be a coach, teaching the child how to cope with pain. Each child is unique. Some children respond well to knowing every detail, while others only want to be aware of a few details. Parents know best how their children will react.
  - Be confident that pain can be reduced. Children say that parents are their greatest source of strength when facing pain.
  - Give brief honest explanations as to what is happening to them.
  - Whenever possible, give some control to the child such as allowing to choose the arm that will receive the IV insertion.
  - Praise the child especially when he shows cooperation.
  - Encourage activities which promote relaxation.
  - Distracting activities such as humorous movies or television programs, telling jokes, reading books, playing video games, or listening to music can all help to reduce the child's perception of pain.
  - Try to keep the patient's hospital room a safe place. Try to perform painful procedures in another location if possible.

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Pediatric Cancer Pain

PATIENT AND FAMILY EDUCATION

- **Messages to be conveyed to patient and family**
  - **Relief of your pain is important to us.**
  - **There is no benefit to suffering with pain.**
  - **Pain can usually be well controlled with medications taken by mouth.**
  - **If these medications do not work, many other options are available.**
  - **Morphine and morphine-like medications are often used to relieve pain.**
    - **When these drugs are used to treat cancer pain, addiction is rarely a problem.**
    - **If you take these medications now, they will still work later.**
  - **Communication with the doctors and nurses is critical.**
    - **Doctors and nurses cannot tell how much pain you have unless you tell them.**
    - **Doctors and nurses want to know about any problems that you think the pain medications may be causing, as there are probably ways to make these better.**
    - **Please tell your doctor or nurse if you are having any difficulty getting your medication or concerns about taking them. They have dealt with these issues before and will help you.**
    - **Teach patient and family to demand treatment for pain and side effects. Inform patient of right to expect adequate pain treatment.**

- **The following must be reviewed with each patient and family and provided in written form, which is dated:**
  - **A list of each medication prescribed, a description of what each medication is for, and instructions as to how and when to take each one**
    - **Stress practical aspects of each medication. (i.e., sustained relief medications should not be split, crushed or chewed for relief of breakthrough pain).**
  - **A list of potential side effects of these medications and what to do if they occur**
  - **A list of all medications to be discontinued**
  - **A list of telephone numbers to reach an appropriate healthcare professional and specific instructions to call regarding:**
    - **Any problems in getting the prescriptions or taking the medication**
    - **New pain, change in pain, or pain not relieved with medication**
    - **Nausea and vomiting that prevents eating for 1 day**
    - **No bowel movements for 3 days**
    - **Difficulty arousing the patient from sleep easily during the daytime**
    - **Confusion**
  - **A plan for follow-up visits and/or phone calls.**

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Pediatric Cancer Pain

NONSTEROIDAL ANTI-INFLAMMATORY DRUGS (NSAID) AND ACETAMINOPHEN PRESCRIBING

Pharmacologic management: These are intended as guidelines for initial doses for opioid naive patients. Doses should be individualized based on age, disease states, and previous or current opioid exposure. Always ascertain any history of drug allergies before prescribing analgesics.

Name of Drug[1]	Pediatric Dose (<50 kg)	Maximum dose/per kg/day
Acetaminophen	10-15 mg/kg every 4-6 h PO	75 mg
Naproxen	5-10 mg/kg every 12 h PO	20 mg
Ibuprofen	5-10 mg/kg every 8-12 h PO	40 mg
Choline Mg trisalicylate	10-15 mg/kg every 8-12 h PO	
Ketorolac	0.5 mg/kg every 6 h IV	30 mg (Give no more than 5 days)

[1]These drugs are antipyretic and should be used with caution inpatients who are neutropenic or recently transplanted. All NSAIDS should be avoided in patients receiving high doses of methotrexate.

Use NSAIDs with caution in patients at high risk for GI or renal toxicities.

- **Patients at high risk for**
  - **Renal toxicities: compromised fluid status, interstitial nephritis, papillary necrosis, and concomitant administration of other nephrotoxic drugs (including cyclosporine, cisplatin, vancomycin, antifungals, acyclovir) and renally excreted chemotherapy**
  - **GI toxicities: history of gastritis or excess alcohol use, major organ dysfunction, NSAIDs given for long periods**
- **Monitoring for toxicities**
  - **Baseline blood pressure, BUN, creatinine, CBC, and fecal occult blood if indicated.**
  - **Repeat every 3 mo to ensure stability**
- **Treatment of toxicities:**
  - **Renal toxicities: discontinue NSAID if BUN or creatinine shows increasing trend or if hypertension develops or worsens**
  - **GI toxicities: consider discontinuing NSAID or changing to another agent (e.g., antacids, H_2 receptor antagonists, misoprostol, omeprazole)**

Further NSAID decisions:

- **If NSAIDs are tried without efficacy, switch to opioid intervention.**
- **If NSAIDs are effective but treatment is limited by side effects that are not deemed serious, consider trial of COX-2 inhibitor.**
- **Toxicity of anti-cancer treatment may increase the risk profile of traditional anti-inflammatory treatment**

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Pediatric Cancer Pain

SPECIALTY CONSULTATIONS

Nonpharmacologic consultation

- Major indication for referral is:
  - Pain likely to be relieved or functioning improved with physical or cognitive modalities
- Physical modalities
  - Bed, bath, and walking supports
  - Positioning instruction
  - Physical therapy
  - Massage
  - Heat and/or ice
  - TENS
  - Acupuncture or acupressure
- Cognitive modalities
  - Imagery/hypnosis
  - Distraction training
  - Relaxation training
  - Active coping training
  - Graded task assignments, setting goals, pacing and prioritizing
  - Cognitive behavioral training

Pain specialist consultation

- Neuropathic pain unrelieved by 2-3 weeks of treatment
- Severe pain refractory to maximum recommended doses of narcotics
- High risk surgical patients. (i.e., patients with bone tumors with complex amputation or bone salvage procedures who experience neuropathy after procedure).

Palliative care consultation

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Pediatric Cancer Pain

Categories of Consensus

NCCN Categories of Consensus

Category 1: **There is uniform NCCN consensus, based on high-level evidence, that the recommendation is appropriate.**

Category 2A: **There is uniform NCCN consensus, based on lower-level evidence including clinical experience, that the recommendation is appropriate.**

Category 2B: **There is nonuniform NCCN consensus (but no major disagreement), based on lower-level evidence including clinical experience, that the recommendation is appropriate.**

Category 3: **There is major NCCN disagreement that the recommendation is appropriate.**

All recommendations are category 2A unless otherwise noted.

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

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