



Interior Health

fentaNYL
(FEN ta nil)

| | | |
|--|---|---|
| OTHER NAMES Sublimaze®, fentaNYL citrate | CLASSIFICATION Opiate agonist - Narcotic Analgesic, General anesthetic | HIGH ALERT MEDICATION *ELDER ALERT See Cautions |
|--|---|---|

INDICATIONS

HEALTH CANADA APPROVED¹

- In anaesthesia as an analgesic, an adjunct to general and regional anaesthesia, and as an anaesthetic for induction and maintenance.

NON HEALTH CANADA APPROVED INDICATIONS BUT SUBSTANTIATED IN THE LITERATURE

- Temporary relief of moderate to severe pain.²

CONTRAINDICATIONS

- Hypersensitivity to fentaNYL.*¹ Cross reaction may occur with meperidine, SUFentanil, alfentanil, anileridine.

CAUTIONS

- Elderly:* may be at increased risk of respiratory depression after the first dose.²
- Medication safety (sound alike/look alike issues): fentaNYL may be confused with alfentanil, SUFentanil
- Rapid IV infusion can result in skeletal muscle and chest wall rigidity; impaired ventilation, respiratory distress, apnea, bronchoconstriction, laryngospasm; inject slowly, a nondepolarizing skeletal muscle relaxant may be required
- Neonates may be more sensitive to respiratory depressant effects and chest wall rigidity than adults¹⁰⁴
- Very young³, debilitated or other poor risk patients (e.g. Addison's disease), respiratory disease and patients with decreased respiratory reserve (e.g. obesity, kyphoscoliosis): increased risk of delayed respiratory depression.²
- Severe renal or hepatic impairment or patients with reduced metabolic rates: dose reduction may be required, due to decreased elimination.²
- Increased intracranial pressure, or head injury: respiratory depression or obscuring of clinical course may occur.^{1,2}

DRUG INTERACTIONS:

- CNS depressants – additive effects increase the risk of respiratory depression.²

PREGNANCY/BREAST FEEDING:

- Contact pharmacy for most recent information.

ADMINISTRATION

| MODE | DIRECT IV | INTERMITTENT INFUSION | CONTINUOUS INFUSION |
|---------------------|--|---|---|
| | YES | YES | YES |
| WHO MAY GIVE | Adults: All registered nurses. Peds/Neonates: Registered nurses with specialized skills – see Requirements + Required Monitoring. | Adults: All registered nurses. Peds/Neonates: Registered nurses with specialized skills – see Required Monitoring. | Adults: All registered nurses Peds/Neonates: Registered nurses with specialized skills - see Required Monitoring. |
| ADULT | Undiluted over 1 - 3 minutes. Intrapartum: May dilute 100 mcg (2 mL) to 10 mL with NS in syringe for 10 mcg/mL (100 mcg/10 mL). | Patient Controlled Analgesia: provided by Pharmacy in a standard concentration of 10 mcg/mL. | ADULT STANDARD CONCENTRATION: = 10 mcg/mL ADULT PALLIATIVE CARE STANDARD CONCENTRATION: = 50 mcg/mL Dose/rate charts available. |



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| PEDIATRIC | Over 3-5 minutes ¹⁰¹ See dilution table for doses less than 25 mcg. (at bottom). Intubation: Over 1-2 minutes. | See <u>Syringe Pump Dilution Table</u> Intubation: Give dose slowly over 1-2 minutes. Other: Give over 10 minutes. | PEDIATRIC STANDARD CONCENTRATION: = 10 mcg/mL Dose/rate chart available. |
| NEONATE | Over 3-5 minutes. ¹⁰¹ See dilution table for doses less than 25 mcg. Intubation: Mix 1 mL (50 mcg) fentaNYL with 4 mL NS for 10 mcg/mL. Give dose slowly over 3 minutes. | See <u>Syringe Pump Dilution Table</u> Intubation: Give dose slowly over 3 minutes. Other: Give over 10 minutes. | NEONATAL STANDARD CONCENTRATION: = 10 mcg/mL Dose/rate chart available. |
| REQUIREMENTS | Continuous Infusion: Use IV infusion device. PCA: Use PCA programmed device. Direct IV for neonatal intubation: Healthcare professional certified in neonatal intubation must be physically present | | |

MONITORING (Exceptions may be made for pain/sedation of palliative care patients)

REQUIRED for IV administration:

Baseline: RR, HR, BP, sedation scale before dose or start of infusion.

Direct into IV tubing or intermittent infusion:

- RR, HR, BP, sedation scale, at 5 and 15 minutes post dose/post infusion.

Direct into IV tubing (pediatric/neonate): In addition to above,

- Continuous electronic respiratory monitoring and pulse oximetry during and for 15 minutes post dose.
- Observe patient continually for 15 minutes post dose for signs/symptoms of apnoea and/or muscle rigidity.

Continuous infusion:

- RR and sedation scale at 5 and 15 minutes then every 2 hours until stable.

Continuous infusion (pediatric/neonate): In addition to above,

- Continuous electronic respiratory monitoring and pulse oximetry.

PCA (patient controlled analgesia):

- see specific requirements as per pre-printed doctors order sheet

REQUIRED for IM/SC administration:

Baseline: RR, HR, BP, sedation and analgesic scale before dose.

RECOMMENDED

- Monitor fluid intake and output; check for bladder distension.
- Check for abdominal distension, gas or constipation.

AVAILABILITY

- Availability (within IH): 50 mcg/mL (2 mL, 5 mL, 20 mL) ampoules/vials. Preservative free. Store at room temperature. Protect from light.

COMPATIBILITY/STABILITY

- Compatible and stable in D5W or NS at room temperature for at least 24 hours.⁷
- *Compatible at Y-site:* abciximab, amiodarone, atropine, bivalirudin, calcium chloride, calcium gluconate, cefazolin, ceftazidime, cefotaxime, cefuroxime, clindamycin, dexamethasone, diltiazem, diphenhydrAMINE, DOBUTamine, DOPamine, enalaprilat, EPINEPHrine, esmolol, furosemide, heparin, hydrocortisone, ketorolac, labetalol, lorazepam, metoclopramide, midazolam, milrinone, nitroglycerin, potassium chloride, propofol, ranitidine.
- *Incompatible at Y-site:* azithromycin, PENTobarbital.
- Compatible in same syringe (for up to 15 minutes): atropine, chlorproMAZINE, dimenhyDRINATE, diphenhydrAMINE, droperidol, hydrOXYzine, metoclopramide, midazolam, prochlorperazine, ranitidine
- For other drug-drug compatibility contact Pharmacy.



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ADVERSE EFFECTS ^{2,3}

RESPIRATORY

- Respiratory depression and apnoea: decreasing quality/depth of respirations may be the initial indication of respiratory depression. Will not occur without sedation, as higher doses are required to produce respiratory depression than to produce sedation. Treatment: naloxone IV and respiratory support.
- Muscular and glottic rigidity. Treatment: naloxone IV and respiratory support as required. Associated with high doses of 5 mcg/kg or greater and rapid administration rates.^{2,8}
- Neonatal Intubation: Possible chest wall rigidity. Muscle relaxation (succinylcholine) overcomes this⁹
- Rapid IV infusion can result in skeletal muscle and chest wall rigidity; impaired ventilation, respiratory distress, apnea, bronchoconstriction, laryngospasm; inject slowly, a nondepolarizing skeletal muscle relaxant may be required¹⁴

CNS

- Sedation; most patients experience sedation at the beginning of therapy and whenever the dose is increased significantly.

CARDIOVASCULAR¹

- Bradycardia: responds to atropine if treatment is required.
- Transient hypotension, facial flushing, (not as severe as with morphine).

MISCELLANEOUS

- Nausea, vomiting. Most common with the initial dose. Dose related. Slow and steady dose titration helps reduce nausea.
- Constipation; tolerance does not develop.
- True allergy (very rare).

DOSE

- **The following doses should only be considered as guidelines.** Safe and effective doses for individual patients will vary considerably, depending on age, medical condition, type of pain, concomitant medications and other factors.
- There is no limit to dose as long as patient is free of adverse side effects.

ADULT

- **Direct IV bolus:** 0.5 - 1 mcg/kg. Titrate up or down according to patient's response.
- **Intrapartum use:** 50 to 100 mcg per dose. Maximum 100 mcg or 1.5 mcg/kg per dose. May repeat dose q 30 minutes. Do not exceed total of 200 mcg in one hour⁴
- **Continuous infusion:**² 0 - 100 mcg/hour. Doses for 'breakthrough' pain: 25-50% of hourly dose, offered every 30 minutes.
- **PCA dosing:** see pre-printed doctors order sheet.

ELDERLY

- Consider decreasing starting dose by 25 - 50%. Titrate up or down according to patient's response.²

PEDIATRIC

- **Direct IV bolus:** 0.5 - 2 mcg/kg. Repeat as required every 30 - 60 minutes.^{5,10}
- **Continuous infusion:** Usual dose 0.5 - 2 mcg/kg/hour.⁸ Doses as high as 20 mcg/kg/hour have been used if tolerance develops.⁵
- **Intubation:**¹⁰¹
- **Direct IV bolus:** 2 - 10 mcg/kg/dose. Give over 1 to 2 minutes.

NEONATE

Analgesia:^{100,101}

- **Direct IV bolus:** 0.5 - 3 mcg/kg/dose slow IV push. Repeat as required usually every 2 - 4 hours
- **Continuous infusion:** Load 5 mcg/kg over 10 minutes followed by 0.5 - 2 mcg/kg/hour. Titrate infusion rate by 0.5 mcg/kg/hour increment until desired effect occurs. Change solution and tubing every 72 hours.
- **Intubation:**¹⁰¹
- **Direct IV bolus:** 2 mcg/kg. Dose range 2 to 4 mcg/kg. Give slowly over 3 minutes to avoid muscle rigidity. Allow at least 30 to 60 seconds for onset/sedation. Do NOT repeat dose.
- **Persistent Pulmonary Hypertension:**
- Loading dose 5-10 mcg/kg over 10 minutes. Infusion of 1-5 mcg/kg/hour¹⁰¹



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RENAL IMPAIRMENT ADJUSTMENTS

- Caution is advised. No guidelines available at this time.

HEPATIC IMPAIRMENT ADJUSTMENTS

- Caution is advised. No guidelines available at this time.

HEMO/PERITONEAL DIALYSIS

- No information available at this time.

PHARMACOKINETICS ¹⁰³

- Onset: (IV): almost immediate, (IM): 7-8 minutes
- Duration (IV): 30-60 minutes, (IM): 1-2 hours

MISCELLANEOUS

- 100 mcg fentaNYL is approximately equianalgesic to 10 mg morphine.¹
- May be given IM¹ or SC.¹²
- Continuous Subcutaneous (SC) infusions: usual rates are 0.5 to 5 mL/hr. Some patients may tolerate higher rates (ex 10 mL/hr or higher).
- pH 4-7.5



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DILUTION TABLE - for Neonatal or Pediatric doses less than 25 mcg

fentaNYL Dilution Table – starting with 50 mcg/mL amp/vial

1. use the 50 mcg/mL amp/vial of fentaNYL
2. dilute 0.5 mL (25 mcg) of fentaNYL with 4.5 mL NS or D5W in a 6 or 12 mL syringe and mix well.
3. this gives 5 mL with a concentration of 5 mcg/mL.
4. diluted solution should be used within 24 hours.

Final Concentration of diluted fentaNYL solution:

**** 5 mcg/mL ****

| Dose mcg (micrograms) | Volume of Diluted fentaNYL (mL) |
|--------------------------|---------------------------------------|
| 1 mcg | 0.2 mL |
| 2 mcg | 0.4 mL |
| 3 mcg | 0.6 mL |
| 4 mcg | 0.8 mL |
| 5 mcg | 1 mL |
| 6 mcg | 1.2 mL |
| 7 mcg | 1.4 mL |
| 8 mcg | 1.6 mL |
| 9 mcg | 1.8 mL |
| 10 mcg | 2 mL |
| 15 mcg | 3 mL |
| 20 mcg | 4 mL |



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fentaNYL IV - references

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