alfentanil (al-fen-ta-nil)

**High Alert**

**Actions**
Analgesic adjunct used to maintain anesthesia with barbiturate/nitrous oxide/oxygen. Analgesic (continuous IV infusion) with nitrous oxide/oxygen while maintaining general anesthesia. Primary induction anesthetic when endotracheal intubation and mechanical ventilation are required.

**Pharmacotherapeutics**

**Classification**
Therapeutic: anesthetic adjuncts, opioid analgesics
Pharmacologic: opioid agonists

**Indications**
Analgesic adjunct used to maintain anesthesia with barbiturate/nitrous oxide/oxygen. Analgesic (continuous IV infusion) with nitrous oxide/oxygen while maintaining general anesthesia. Primary induction anesthetic when endotracheal intubation and mechanical ventilation are required.

**Pharmacokinetics**
Absorption: Following IV administration, absorption is essentially complete.
Distribution: Does not penetrate adipose tissue. Crosses placenta, enters breast milk.
Metabolism and Excretion: 95% metabolized by the liver.
Half-life: 60–130 minutes (p in children).

**TIME/ACTION PROFILE (analgesia and respiratory depression)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>immediate</td>
<td>1–1.5 min</td>
<td>5–10 min</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

**Contraindications**
Hypersensitivity; Known intolerance.

**Precautions**
Debilitated, geriatric or severely ill patients; Diabetes; Severe pulmonary or hepatic disease; CNS tumors; Increased intracranial pressure; Bradycardia; Adrenal insufficiency; Undiagnosed abdominal pain; Hypothyroidism; Alcoholism; Cardiac disease (arrhythmias); GI/Lung disease (obstructive); OB, Lactation, Pedi: Safety not established; Geri: Older patients may be more susceptible to side effects.

**Adverse Reactions/Side Effects**

|Systemic | CNS: dizziness, sleepiness; EENT: blurred vision; Resp: apnea, respiratory depression; CV: bradycardia, hypertension; GI: nausea, vomiting; MS: thoracic muscle rigidity, skeletal muscle rigidity.

**Interactions**

**Drug-Drug:** alcohol, antihistamines, antidepresants, and other sedative/hypnotics—concurrent use (p CNS depression). MAO inhibitors should be avoided for 14 days before use. Concurrent use of benzodiazepines, antidepressants, alcohol, or anesthetics may 

**Drug-Natural Products:** Concommitant use of kava, valerian, saffron (p CNS depression).

**Route/Dosage**

**Incremental Injection**
(Duration of Anesthesia 30 min—Induction Period)

|IV (Adults)| 5–20 mcg/kg |

**Incremental Injection**
(Duration of Anesthesia <30 min—Maintenance Period)

|IV (Adults)| 3–5 mcg/kg every 20–60 min to a total dose of 60–120 mcg/kg |

**Incremental Injection**
(Duration of Anesthesia 30–60 min—Induction Period)

|IV (Adults)| 20–50 mcg/kg |

**Incremental Injection**
(Duration of Anesthesia 30–60 min—Maintenance Period)

|IV (Adults)| 5–15 mcg/kg every 20–60 min (up to a total dose of 75 mg/kg) |

**Pharmacologic Similarities**

|Similar Analgesics| Sufentanil, remifentanil, fentanyl |

**Additional Information**

|Genetic Implication| CMAP TALS indicate life-threatening, underlines indicate most frequent, strikethrough indicates discontinued. |
Continuous Infusion (Duration of Anesthesia ≥45 min)—Induction

IV (Adults): 50–75 mcg/kg.

Continuous Infusion (Duration of Anesthesia ≥45 min)—Maintenance

IV (Adults): 0.5–5 mcg/kg/min (average rate 1–1.5 mcg/kg/min). Infusion rate should be decreased by 30–50% after first hour of maintenance. If lightening occurs, infusion rate may be increased up to 3 mcg/kg/min or bolus of 7 mcg/kg may be administered.

Pediatric dose (unlabeled)

IV (Children): Induction—12.5–50 mcg/kg initially, followed by supplemental doses of 10–15 mcg/kg/min or bolus of 5–7 mcg/kg/min.

Anesthetic Induction (Duration of Anesthesia ≥45 min)

IV (Adults): 130–245 mcg/kg followed by 0.5–1.5 mcg/kg/min or general anesthesia.

Monitored Anesthesia Care (MAC)—Induction

IV (Adults): 3–8 mcg/kg.

Monitored Anesthesia Care (MAC)—Maintenance

IV (Adults): 3–5 mcg/kg every 5–20 min or 0.25–1 mcg/kg/min (total dose 3–40 mg/kg).

NURSING IMPLICATIONS

Assessment

• Assess vital signs, especially respiratory status and ECG, frequently during and following administration. Notify health care professional immediately of significant changes. Postoperative pain may require treatment relatively early in recovery period due to short duration of alfentanil.

Implementation

• High Alert: Accidental overdose of opioid analgesics has resulted in fatalities. Before administering, clarify all ambiguous orders; have second practitioner independently check original order, dose calculations and infusion pump programming.

• Benzodiazepines may be administered before alfentanil to reduce induction dose requirements and decrease time to loss of consciousness; may also increase the risk of hypotension.

IV Administration

• Direct IV: Administer small volumes for direct IV use undiluted via tuberculin syringe for accuracy.

• Rate: Administer slowly over 90 sec–3 min; may reduce incidence and severity of muscle rigidity, bradycardia, or hypotension. Neuromuscular blocking agents may be administered concurrently to decrease muscle rigidity.

• Continuous Infusion: Diluent: Dilute 20 mL of alfentanil (500 mcg/mL solution) with 230 mL of 0.9% NaCl, D5W, D5/0.9% NaCl, or lactated Ringer’s solution. Concentration: 40 mcg/mL. Rate: See Route and Dosage section.

• Discontinue IV infusion at least 10–15 min before the end of surgery.

Patient/Family Teaching

• Discuss the use of anesthetic agents and sensations to expect with patient before surgery.
CONTINUED

alfentanil

- Alfentanil may cause drowsiness and dizziness. Advise patient to call for assistance when ambulating.
- Advise patient to change positions slowly to minimize orthostatic hypotension.
- After outpatient surgery, instruct patients to avoid alcohol or other CNS depressants for 24 hr after the administration of alfentanil.

Evaluation/Desired Outcomes

- General quiescence.
- Reduced motor activity.
- Pronounced analgesia.

Why was this drug prescribed for your patient?