**atracurium (a-tra-koo-r-e-um)**

**Therapeutic Class:** Neuronal blocking agents-nondepolarizing

**Pregnancy Category:** C

### Indications


### Action

Prevents neuromuscular transmission by blocking the effect of acetylcholine at the myoneural junction. Has no analgesic or anxiolytic properties.

### Therapeutic Effects:

Skeletal muscle paralysis.

### Pharmacokinetics

**Absorption:** Following IV administration, absorption is essentially complete.

**Distribution:** Distributed into extracellular space; crosses the placenta.

**Metabolism and Excretion:** Metabolized in plasma; 5% excreted unchanged in urine.

**Half-life:** Infants: 20 min; Children: 17 min; Adults: 16 min.

### TIME/ACTION PROFILE (neuromuscular blockade)

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV</td>
<td>1–4 min</td>
<td>3–5 min</td>
<td>20–35 min</td>
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### Contraindications/Precautions

- **Contraindicated in:** Hypersensitivity; Products containing benzyl alcohol should be avoided in neonates.
- **Use Caution in:** Dehydration or electrolyte abnormalities; Situations in which histamine release would be problematic; Fractures or muscle spasm; Hyperthermia; Shock; Extensive burns; Low plasma pseudocholinesterase levels; Obese patients; OB, Lactation: Safety not established (use only if benefit outweighs potential risk to fetus); Pedi: Children 1 mo (safety and effectiveness not established).

### Adverse Reactions/Side Effects

**Resp:** Bronchospasm.

**CV:** Hypotension, tachycardia.

**Derm:** Flushing, rash.

**Misc:** Allergic reactions including anaphylaxis.

### Interactions

**Drug-Drug:** Intensity and duration of paralysis may be prolonged by pretreatment with succinylcholine, general anesthesia (inhalation), aminoglycosides, vancomycin, tetracyclines, polymyxin B, colistin, clindamycin, lidocaine, and other local anesthetics, lithium, quinidine, propranolol, beta-adrenergic blocking agents, potassium-sparing diuretics, or magnesium. Higher infusion rates may be required and duration of action may be shortened in patients receiving long-term carbamazepine or phenytoin.

### Route/Dosage

**IV (Adults and Children ≥ 2 yr):** 0.4–0.5 mg/kg initially (0.25–0.35 mg/kg if administered after steady-state anesthesia with enflurane or isoflurane or 0.3–0.4 mg/kg following succinylcholine); may then repeat with 0.08–0.1 mg/kg 20–45 min after initial dose as needed, or by continuous infusion at 5–9 mcg/kg/min.

**IV (Neonates, Infants, and Children 1 mo–2 yr):** 0.3–0.4 mg/kg initially followed by maintenance doses of 0.3–0.4 mg/kg as needed.

### Nursing Implications

**Assessment:**
- Assess respiratory status continuously throughout therapy with atracurium. Use only to facilitate intubation or in patients already intubated.
- Monitor neuromuscular response with a peripheral nerve stimulator intraoperatively. Paralysis is initially selective and usually occurs sequentially in the following muscles: levator muscles of eyelids, muscles of mastication, limb muscles, abdominal muscles, muscles of the glottis, intercostal muscles, and the diaphragm. Recovery of muscle function usually occurs in reverse order.
- Monitor ECG, heart rate, and BP throughout administration.

### Notes

- **Cardinal drug name:** Generic Implication: CPT/HCPCS indicate most frequent. D20000 indicates discontinued.
Observe the patient for residual muscle weakness and respiratory distress during the recovery period.

Monitor infusion site frequently. If signs of tissue irritation or extravasation occur, discontinue and restart in another vein.

Toxicity and Overdose: If overdose occurs, use peripheral nerve stimulator to determine the degree of neuromuscular blockade. Maintain airway patency and ventilation until recovery of normal respirations occurs.

Administration of anticholinesterase agents (neostigmine, pyridostigmine) may be used to antagonize the action of atracurium once the patient has demonstrated some spontaneous recovery from neuromuscular block. Atropine is usually administered prior to or concurrently with anticholinesterase agents to counteract the muscarinic effects.

Administration of fluids and vasopressors may be necessary to treat severe hypotension or shock.

**Potential Nursing Diagnoses**

- Ineffective breathing pattern (Indications)
- Impaired verbal communication (Side Effects)
- Fear (Side Effects)

**Implementation**

- High Alert: Unplanned administration of a neuromuscular blocking agent instead of administration of the intended medication or administration of a neuromuscular blocking agent in the absence of ventilatory support has resulted in serious harm and death. Confusing similarities in packaging and insufficiently controlled access to these medications are often implicated in these medication errors.

- Dose is titrated to patient response.

- Atracurium has no effect on consciousness or pain threshold. Adequate anesthesia/analgesia should always be used when neuromuscular blocking agents are used as an adjunct to surgical procedures or when painful procedures are performed. Benzodiazepines and/or analgesics should be administered concurrently when prolonged neuromuscular blockade therapy is used for ventilator patients, because patients are awake and able to feel all sensations.

- If eyes remain open throughout prolonged administration, protect corneas with artificial tears.

**IV Administration**

- **Direct IV:** May be administered undiluted. Rate: Administer initial IV dose as a bolus over 1 min.

- **Intermittent Infusion:** Maintenance dose is usually required 20–45 min following initial dose.

- **Diluent:** D5W, 0.9% NaCl, or D5/0.9% NaCl. Administer every 15–25 min or by continuous infusion.

- **Continuous Infusion:** Maintenance dose is administered by infusion. Rate: Titrate according to patient response.

- **Storage Compatibility:** alfentanil, fentanyl, midazolam, sufentanil.

- **Y-Site Compatibility:** acyclovir, almitrine, alfentanil, amikacin, amiodarone, amphotericin B lipid complex, amiodarone, atropine, aztreonam, calcium gluconate, cefazolin, cefotaxime, ceftriaxone, cefuroxime axetil, clindamycin, cloxacillin, cyclosporine, dextrose, doxorubicin, docetaxel, doxorubicin hydrosis, doxycycline, dopamine, etoposide, epinephrine, epirubicin, esmolol, famotidine, fenoldopam, fentanyl, fluconazole, fludarabine, fluocinolone acetonide, fluoxetine, furosemide, gemcitabine, gentamicin, gentamycin, heparin, heparin, hirudine, acyclovir, amikacin, amoxicillin, ampicillin, atropine, aztreonam, calcium gluconate, cefazolin, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, cyclosporine, doxorubicin, doxorubicin, dexamethasone, docetaxel, dopamine, etoposide, epinephrine, epirubicin, esmolol, famotidine, fenoldopam, fentanyl, fluconazole, fludarabine, fluocinolone acetonide, fluoxetine, furosemide, gemcitabine, gentamicin, gentamycin, heparin, heparin, hirudine, amikacin, amoxicillin, ampicillin, atropine, aztreonam, calcium gluconate, cefazolin, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, cyclosporine, doxorubicin, doxorubicin, dexamethasone, docetaxel, dopamine, etoposide, epinephrine, epirubicin, esmolol, famotidine, fenoldopam, fentanyl, fluconazole, fludarabine, fluocinolone acetonide, fluoxetine, furosemide, gemcitabine, gentamicin, gentamycin, heparin, heparin, hirudine.
**CONTINUED**

**atracurium**

- aminophylline, amphotericin B colloidal, carboplatin, dexamethasone, diazepam, diazoxide, furosemide, ganciclovir, indomethacin, pantoprazole, pentobarbital, phenobarbital, phenytoin, sodium bicarbonate, thiopental.

- **Y-Site Incompatibility:** aminophylline, amphotericin B colloidal, carboplatin, dexamethasone, diazepam, diazoxide, furosemide, ganciclovir, indomethacin, pantoprazole, pentobarbital, phenobarbital, phenytoin, sodium bicarbonate, thiopental.

**Patient/Family Teaching**

- Explain all procedures to patient receiving atracurium therapy without general anesthesia, because consciousness is not affected by atracurium alone.
- Reassure patient that communication abilities will return as the medication wears off.

**Evaluation/Desired Outcomes**

- Adequate suppression of the twitch response when tested with peripheral nerve stimulation and subsequent muscle paralysis.
- Improved compliance during mechanical ventilation.

*Why was this drug prescribed for your patient?*