ISOPRENALENE

ACTIONS

- Synthetic sympathomimetic amine structurally related to adrenaline
- Acts exclusively on beta-adrenergic receptors, primarily on the heart, and on the smooth muscle of bronchi, skeletal muscle vasculature and gastrointestinal tract
- Increases cardiac output and venous return secondary to positive inotropic and chronotropic effects
- Increases automaticity and atrioventricular nodal conduction and usually improves coronary blood flow
- Relaxes smooth muscle resulting in a decrease in peripheral vascular resistance, and relaxes bronchial and GIT smooth muscle

INDICATIONS

- Heart block or bradyarrhythmias
- Beta-blocker overdose
- Torsades de pointe with prolonged QTc
- Adjunct to cardiogenic, septic shock
- Ventricular arrhythmias associated with carbamazepine overdose

DOSAGE & ADMINISTRATION

INTRAVENOUS BOLUS INJECTION

Dilute 200mcg (1 mL) in 9 mL sodium chloride 0.9% or glucose 5%
Concentration = 20 micrograms/mL
Bolus dose depends on clinical indication

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta blocker overdose</td>
<td>20mcg</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>10 - 20mcg</td>
</tr>
<tr>
<td>Torsades</td>
<td>20mcg</td>
</tr>
<tr>
<td>Heart block</td>
<td>20 - 60mcg</td>
</tr>
</tbody>
</table>

Repeate doses can be given according to clincial response to a maximum of 100mcg, and should be followed by an infusion

INTRAVENOUS INFUSION

Dilute 2mg (10ml) in 490mls 5% dextrose
Concentration: 4 mcg/ml

If the heart rate exceeds 110 beats/minute, it may be advisable to decrease or temporarily discontinue the infusion.
If no response to dosage administered, consult ICU Consultant with a view to increasing dose, changing to or adding in another chronotropic agent.

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dose range</th>
<th>Titrates to below :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bradyarrhythmias</td>
<td>2-10mcg/min</td>
<td>HR &amp; rhythm</td>
</tr>
<tr>
<td>Heart Block</td>
<td>5mcg/min</td>
<td>HR</td>
</tr>
<tr>
<td>Torsades de pointe</td>
<td>1 - 4 mcg/min</td>
<td>HR &gt;90bpm &amp; rhythm</td>
</tr>
<tr>
<td>Cardiogenic shock /CCF</td>
<td>0.5 - 5mcg/min</td>
<td>HR, BP, CVP, Urine output</td>
</tr>
<tr>
<td>Beta-blocker poisoning</td>
<td>2 - 4mcg/min</td>
<td>HR</td>
</tr>
<tr>
<td>Carbamazepine overdose</td>
<td>0.5 - 10mcg/min</td>
<td>HR</td>
</tr>
</tbody>
</table>

- Rates over 30mcg/min have been used in advanced stages of cardiogenic shock
- Rates for beta blocker poisoning may need to be doubled, quadrupled or

IMPORTANT: This is a guideline ONLY, for more detailed information please refer to:
- MIMS, Micromedex, and The Australian Injectable Drugs Handbook, Australian Medicines Handbook, NSW Health mHealth NSW Local Health District

Check compatibility before administering with other medications

CRGH ICU Drug Guideline: This guideline is written for use in the ICU only | ISOPRENALENE

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### CRGH ICU Drug Guideline: ISOPRENALINE

**Concord Repatriation General Hospital**

**Intensive Care Unit Drug Guidelines**

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**Monitoring**

- HR
- Blood pressure
- RR and saturations

**Adverse Reactions**

- Palpitations, tachycardia, hypotension, arrhythmias, angina, hypertension
- Flushing, headache, nervousness, restlessness, fine tremor
- Nausea, dry mouth, insomnia, rash, itch, wheeze

**Contraindication**

- Ventricular arrhythmia, tachyarrhythmia, tachycardia or heart block caused by digitalis intoxication
- Concomitant administration of adrenaline or digoxin
- Recent myocardial infarction; angina pectoris;
- Hypersensitivity to isoprenaline
- Patients with known or suspected phaeochromocytoma

**Precautions**

- Correct hypovolaemia before commencing infusion
- Use of chlorpromazine or MAO inhibitors – exacerbate effects of isoprenaline
- IV Corticosteroid use/ aminophylline administration – these can increase cardiotoxicity
- Should not be given simultaneously with adrenaline or digitalis, combined effects may induce serious arrhythmias.
- Hyperthyroidism
- PREGNANCY CLASS A

**Compatibility**

- Glucose 5%; Normal saline 0.9%

**Trade Names**

- ISUPREL

**References**

- MIMS; Australian Medicines Handbook; eTherapeutic guidelines; Injectable drug handbook; Micromedex 2.0

**Revised By**

- Marie Cusick RN
- Rosalba Cross Intensivist Feb 2015
- Katrina Skylas ICU CNC July 2015
- Linh Thai Pharmacist December 2015

**Endorsed By**

- Nursing Policy & Practice Committee February 2016
- CRGH Drug Committee February 2016

**Revision Due**

- February 2020

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Increased higher