



# hydrALAZINE HYDROCHLORIDE

<b>Indication</b>	<ul style="list-style-type: none"> <li>• Acute severe hypertension<sup>1,2</sup></li> <li>• Resistant hypertension in addition to other antihypertensive agents<sup>1</sup> <ul style="list-style-type: none"> <li>○ Usually used as an adjunct while titrating the dose of other antihypertensive agents<sup>1</sup></li> </ul> </li> </ul>		
<b>ORAL</b>	<b>Presentation</b>	<ul style="list-style-type: none"> <li>• Vial (powder): 20 mg (Apresoline®)</li> <li>• Vial (solution): 20 mg in 1 mL (Hydralazine Link®)</li> <li>• Tablet: 25 mg (Alphapress®)</li> </ul>	
	<b>Dosage</b> <sup>1-5</sup>	<ul style="list-style-type: none"> <li>• 0.25 mg/kg every 6 to 8 hours <ul style="list-style-type: none"> <li>○ If required, increase by 0.25 mg/kg once daily (not more frequently)</li> <li>○ Maximum dose 7.5 mg/kg/day</li> </ul> </li> </ul>	
	<b>Preparation</b> <sup>1</sup> (vial for oral use)	<ul style="list-style-type: none"> <li>• <u>Vial powder (20 mg):</u> <ul style="list-style-type: none"> <li>○ Add 1 mL water for injection to 20 mg vial</li> <li>○ Draw up entire contents of vial and make up to 20 mL total volume with water for injection</li> <li>○ <i>Concentration now equal to 1 mg/mL</i></li> </ul> </li> <li>• <u>Vial solution (20 mg in 1 mL):</u> <ul style="list-style-type: none"> <li>○ Draw up entire contents of vial and make up to 20 mL total volume with water for injection</li> <li>○ <i>Concentration now equal to 1 mg/mL</i></li> </ul> </li> </ul>	
	<b>Preparation</b> (tablet if vial not available)	<ul style="list-style-type: none"> <li>• <u>Tablet (25 mg)</u> <ul style="list-style-type: none"> <li>○ Add tablet to oral/enteral syringe with 25 mL water for injection</li> <li>○ Agitate well (tablet disperses in 2 minutes)</li> <li>○ <i>Concentration now equal to 1 mg/mL</i></li> </ul> </li> </ul>	
	<b>Administration</b>	<ul style="list-style-type: none"> <li>• Draw up prescribed dose and administer immediately</li> <li>• Oral/OGT/NGT 1 hour prior to feed <ul style="list-style-type: none"> <li>○ Absorption may be reduced if administered with feeds</li> </ul> </li> </ul>	
<b>INTRAVENOUS</b>	<b>Presentation</b>	<ul style="list-style-type: none"> <li>• Vial (powder): 20 mg (Apresoline®)</li> <li>• Vial (solution): 20 mg in 1 mL (Hydralazine Link®)</li> </ul>	
	<b>Dosage</b> <sup>1,2,4,5</sup>	<ul style="list-style-type: none"> <li>• 0.1 mg/kg every 6 to 8 hours as required</li> <li>• If required, increase in increments of 0.1 mg/kg <ul style="list-style-type: none"> <li>○ Maximum dose 2 mg/kg/day</li> </ul> </li> </ul>	
	<b>Preparation</b> <sup>1,3,6</sup>	<ul style="list-style-type: none"> <li>• <u>Vial powder (20 mg)</u> <ul style="list-style-type: none"> <li>○ Add 1 mL of water for injection to vial</li> <li>○ Draw up 0.5 mL from vial and make up to 10 mL total volume with 0.9% sodium chloride</li> <li>○ <i>Concentration now equal to 1 mg/mL</i></li> </ul> </li> <li>• <u>Vial solution (20 mg in 1 mL)</u> <ul style="list-style-type: none"> <li>○ Draw up 10 mg (0.5 mL) from vial and make up to 10 mL total volume with 0.9% sodium chloride</li> <li>○ <i>Concentration now equal to 1 mg/mL</i></li> </ul> </li> </ul>	
	<b>Administration</b>	<ul style="list-style-type: none"> <li>• Draw up prescribed dose <ul style="list-style-type: none"> <li>○ IV injection through a proximal port over 5 minutes<sup>6</sup></li> <li>○ Follow with 1 mL flush of 0.9% sodium chloride over 5 minutes</li> </ul> </li> </ul>	

<b>Special considerations</b>	<ul style="list-style-type: none"> <li>• <b>Note:</b> doses are limited to lower referenced ranges (consensus opinion). Consult pharmacist re higher dosing requirements</li> <li>• Contraindications <ul style="list-style-type: none"> <li>○ Severe tachycardia, high output heart failure; idiopathic systemic lupus erythematosus; myocardial insufficiency due to mechanical obstruction<sup>1</sup></li> </ul> </li> <li>• Cautions <ul style="list-style-type: none"> <li>○ Avoid rapid reduction in BP due to risk of cerebral ischemia and haemorrhage (particularly in premature infants)<sup>2</sup></li> </ul> </li> <li>• IV route more potent than oral. Review dosage if converting between IV and oral routes</li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Oral administration <ul style="list-style-type: none"> <li>○ BP and HR 30 minutes before and after dose for duration of course</li> </ul> </li> <li>• IV administration <ul style="list-style-type: none"> <li>○ Continuous cardiorespiratory monitoring<sup>6</sup> and IABP<sup>6</sup></li> <li>○ If IABP not available, NIBP 30 minutes before and after dose for duration of course with additional NIBP every 4 hours until dose effect is quantified</li> </ul> </li> <li>• If long term therapy, electrolytes (particularly sodium) at SMO discretion<sup>7</sup></li> </ul>
<b>Compatibility</b>	<ul style="list-style-type: none"> <li>• Fluids <ul style="list-style-type: none"> <li>○ 0.9% sodium chloride<sup>6</sup></li> </ul> </li> <li>• Drugs Y site <ul style="list-style-type: none"> <li>○ Heparin sodium<sup>6</sup></li> </ul> </li> </ul>
<b>Incompatibility</b>	<ul style="list-style-type: none"> <li>• Fluids <ul style="list-style-type: none"> <li>○ Glucose and glucose containing solutions<sup>6</sup></li> </ul> </li> <li>• Drugs <ul style="list-style-type: none"> <li>○ Aciclovir<sup>6</sup>, ampicillin<sup>6</sup>, cefazolin<sup>6</sup>, cefotaxime<sup>6</sup>, ceftazidime<sup>6</sup>, ceftriaxone<sup>6</sup>, ertapenem<sup>6</sup>, folic acid<sup>6</sup>, furosemide<sup>6</sup>, ganciclovir<sup>6</sup>, glyceryl trinitrate<sup>6</sup>, indomethacin<sup>6</sup>, methylprednisolone sodium succinate<sup>6</sup>, piperacillin-tazobactam (EDTA-free)<sup>6</sup>, potassium acetate<sup>6</sup>, sodium nitroprusside<sup>6</sup></li> </ul> </li> </ul>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>• Diazoxide: if given shortly before or after diazoxide, severe hypotension can occur<sup>1,8</sup></li> <li>• Adrenaline (epinephrine): enhances cardiac-accelerating effects of hydralazine<sup>8</sup></li> <li>• Other antihypertensives, such as beta-blockers, calcium antagonists, ACE inhibitors, diuretics: concurrent administration may increase bioavailability<sup>1,8</sup></li> </ul>
<b>Stability<sup>8</sup></b>	<ul style="list-style-type: none"> <li>• Vial (powder or solution) <ul style="list-style-type: none"> <li>○ Store below 25 °C. Do not freeze. Protect from light</li> </ul> </li> <li>• Diluted IV solution <ul style="list-style-type: none"> <li>○ Use immediately</li> </ul> </li> <li>• Oral solution prepared from tablet <ul style="list-style-type: none"> <li>○ Use immediately</li> </ul> </li> </ul>
<b>Side effects</b>	<ul style="list-style-type: none"> <li>• Common <ul style="list-style-type: none"> <li>○ Circulatory: hypotension<sup>3</sup>, tachycardia<sup>1,3</sup></li> <li>○ Digestive: diarrhoea<sup>1,3</sup>, gastrointestinal disorders<sup>1</sup>, vomiting<sup>1,3</sup></li> <li>○ Integumentary: flushing<sup>1</sup></li> <li>○ Respiratory: nasal congestion<sup>1</sup></li> </ul> </li> <li>• Rare or very rare <ul style="list-style-type: none"> <li>○ Blood pathology: anaemia<sup>1</sup>, agranulocytosis<sup>1,3</sup>, haemolytic anaemia<sup>1</sup>, leucocytosis<sup>1</sup>, leucopaenia<sup>1</sup>, neutropenia<sup>1</sup>, pancytopenia<sup>1</sup>, thrombocytopenia<sup>1</sup></li> <li>○ Circulatory: heart failure<sup>1</sup>, oedema<sup>1,9</sup>, vasculitis<sup>1</sup></li> <li>○ Integumentary: skin reactions<sup>1</sup></li> <li>○ Lymphatic: lymphadenopathy<sup>1</sup>, splenomegaly<sup>1</sup></li> <li>○ CNS: fever<sup>1</sup>, conjunctivitis<sup>1,3</sup></li> <li>○ Urinary: acute kidney injury<sup>1</sup>, haematuria<sup>1</sup>, proteinuria<sup>1</sup>, urinary retention<sup>1</sup></li> </ul> </li> </ul>

<b>Actions</b>	<ul style="list-style-type: none"> <li>• Peripheral vasodilation (predominantly in arterioles)<sup>7,9</sup> <ul style="list-style-type: none"> <li>○ Increases cardiac output</li> <li>○ Decreases systemic vascular resistance</li> <li>○ Decreases arterial BP (diastolic more than systolic)</li> </ul> </li> <li>• Increases splanchnic, coronary, cerebral and renal blood flow<sup>3</sup></li> <li>• Onset of action 5–20 minutes<sup>6</sup></li> </ul>
<b>Abbreviations</b>	BP: blood pressure, CNS: central nervous system, HR: heart rate, IABP: invasive arterial blood pressure, IV: intravenous, NGT: nasogastric tube, NIBP: non-invasive blood pressure, OGT: orogastric tube, SMO: most senior medical officer
<b>Keywords</b>	antihypertensive, blood pressure, hydralazine, hydralazine hydrochloride, hypertension, neonatal medicine, neonatal monograph, vasodilator

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

## References

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## Document history

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