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## Hydralazine Intravenous Policy

Hutt Maternity Policies provide guidance for the midwives and medical staff working in Hutt Maternity Services. Please discuss policies relevant to your care with your Lead Maternity Carer.

### **Purpose**

The purpose of this policy is to:

- provide safe and effective care for women
- establish a local approach to care that is evidence based and consistent
- inform good decision making

### **Scope**

- All obstetric staff employed by the Hutt DHB
- All midwifery staff employed by the Hutt DHB
- All Hutt Valley DHB maternity access agreement holders.
- Anaesthetic staff
- Neonatal staff

### **Preamble**

Intravenous hydralazine, intravenous labetalol and oral Nifedipine may all be used in pregnancy for the acute treatment of severe hypertension. Although smaller studies have shown a trend towards maternal hypotension with associated risk of abruption, caesarean section and decreased apgars with the use of IV hydralazine, no definitive evidence exists that one agent is superior to another. IV hydralazine has been proven to be effective in the control of severe hypertension. It is a potent vasodilator.

The Consultant Obstetrician on duty must be informed of any Obstetric patient with severe hypertension or severe PET.

Treatment with hydralazine should be authorised by Consultant Obstetrician, unless this is likely to delay institution of appropriate treatment.

There should be a low threshold to involve Anaesthetist

The Neonatal team should be informed soon as it becomes necessary to do so, such as when delivery is planned.

### **Indication**

- Severe hypertension in pregnancy not controlled by oral antihypertensives, or where oral treatment is inappropriate.
- Systolic BP > 160mm Hg +/- Diastolic BP > 110mm Hg on two separate readings (Draycott, Winter, Crofts & Barnfield, 2009)
- Consideration should be given to treatment at lower blood pressure when the clinical picture is suggestive of rapid deterioration with anticipated severe pre-eclampsia (CIMACH 2005).

## **Contraindications**

- Known hypersensitivity to hydralazine
- Idiopathic systemic lupus erythematosus (SLE) and related vasculitic diseases
- Severe tachycardia and heart failure with a high cardiac output (eg.thyrotoxicosis)
- Myocardial insufficiency due to mechanical obstruction

## **Risks**

### **Maternal hypotensive crises may be precipitated by:**

- Hypovolaemia - particularly in the women with severe pre-eclampsia
- Epidural analgesia
- Vasculitic disorders
- Known sensitivity to hydralazine

If there is concern about potential for hypotension a fluid preload may be considered

### **Impaired placental blood flow/ fetal compromise**

As uterine blood flow is passive, maternal vasodilation may result in fetal compromise when there is limited placental reserve, even prior to development of maternal hypotension. In known impaired placental function and intrauterine growth restriction, **continuous fetal monitoring is required** as a cautionary action.

### **Other potential maternal effects:**

- Headache
- Palpitations, tachycardia
- Nausea, vomiting, diarrhoea
- Severe hypotension, dizziness
- Flushing, nasal congestion, rash
- Muscle tremors
- Anginal symptoms

Be aware the side effects may mimic the symptoms of deteriorating pre-eclampsia.

## **Precautions**

- Hydralazine should only be administered in an appropriately equipped environment such as the delivery suite.
- When the hypertension is due to pre-eclampsia, the more severe hypertension should be treated initially with a smaller loading dose and the response to this assessed prior to commencing an infusion (the response is unpredictable).
- Glucose solutions are not compatible with Hydralazine.
- Preparations not used within 24 hours of reconstitution should be discarded (Manufacturers recommendation).

## **Equipment**

- 5 ampoules of Hydralazine - 20mgs powder in a 2ml ampoule. 5mls of sterile water for injection.
- 100mls of intravenous normal saline.
- 10ml syringe.
- 2 intravenous giving sets.
- 1 electronic infusion device.

## **Procedure**

- Upon medical diagnosis of severe uncontrolled hypertension, transfer to delivery suite.
- Establish intravenous access.
- Establish baseline monitor maternal observations (use mercury BP machine)
- Monitor baby by continuous CTG
- Exclude contraindications for hydralazine administration
- Consider risk factors for severe hypotension
- A loading dose of hydralazine is administered by the RMO (Appendix I).
- If there is inadequate response to the first bolus treatment, in consultation with the obstetric specialist, a second bolus may be prescribed by the registrar and /or a hydralazine infusion may be commenced. The IV infusion MUST be double-checked by a senior midwife prior to being connected to the woman, with specific attention to the '5 rights' and the correct configuration of the IV lines.
- Maternal and fetal monitoring is continued during treatment.

## **References**

Duley L et al. Drugs for treatment of very high blood pressure during pregnancy. Cochrane database of systematic reviews 2006

Magee I et al. Hydralazine for treatment of severe hypertension in pregnancy: a metaanalysis. BMJ 327: 955-60. 2003

Saving mothers lives 2003-2005. The Confidential

Enquires into Maternal and children's Deaths in the United Kingdom.

Lowe SA et al. Guideline for management of hypertension disorders of pregnancy 2008. Society of obstetric medicine of Australia and New Zealand

Brown, Et al. (2000) the detection investigation and management of hypertension in pregnancy, full consensus statement. Australian and New Zealand Journal of Obstetric & Gynaecology, 40(2) 139 - 155

Information for Health Professionals Data Sheet, Apresoline, hydralazine hydrochloride BP injection. August 2008

<http://www.medsafe.govt.nz/Profs/Datasheet/a/Apre>

solineinj.htm Royal CoGynaecologists. (2006).

Hydralazine Intravenous Policy (MATY034)

Greentop guideline Management

severe preeclampsia/Eclampsia

<http://www.rcog.org.uk/guidelines/eclampsia.html>

### **Informed Consent**

The right of a consumer to make an informed choice and give informed consent, including the right to refuse medical treatment, is enshrined in law and in the Code of Health and Disability Consumers' Rights in New Zealand. This means that a woman can choose to decline treatment, referral to another practitioner, or transfer of clinical responsibility. If this occurs follow the process map on page 18 of the Referral Guidelines (Ministry of Health, 2012).

## **Appendix I**

### **Hydralazine - Intravenous Administration Procedure**

#### **One on One Midwifery Care Documentation - MEOWS Chart**

#### **Indication:**

- Emergency management of severe hypertension uncontrolled by oral antihypertensives.

Contraindications: (see protocol)

- maternal cardiac disease, known hypersensitivity

#### **Equipment**

- 5 ampoules of Hydralazine - 20mgs powder in a 2ml ampoule.
- 5mls of sterile water for injection.
- 100mls of intravenous normal saline.
- 10ml syringe.
- 2 intravenous giving sets.
- 1 electronic infusion device.

#### **Procedure**

1. Transfer to delivery suite
2. Commence Electronic Fetal Monitoring
3. RMO administration of a loading dose of Hydralazine
4. RMO review
5. if indicated, in discussion with the specialist obstetrician, repeat the loading dose and/or commence a hydralazine infusion

#### **Loading Dose**

- A loading dose of 5-10mgs (5-10mls) is to be administered by the RMO as a slow manual push. (NB: if there is suspected pre-eclampsia related hypovolaemia, the lower dose is recommended.) SOMANZ 2014 recommends IV bolus can be repeated every 20 mins maximum of 30 mgs.
- This may be the only treatment required to control the blood pressure.

#### **Preparation of loading dose (1 mg/ml)**

- Inject 1ml of sterile water into a 20mg ampoule of Hydralazine.
- Draw up the mixed Hydralazine 20mgs into a 20ml syringe. Total volume 1ml.
- Dilute to 20mls by adding 19mls of normal saline.
- Concentration is now 20mgs in 20mls.
- Attach a completed 'medication added' label to the syringe.

#### **Administration**

- The RMO administers the initial loading dose of 5-10mgs (5-10mls) of Hydralazine by slow intravenous injection over a period of 5 minutes to avoid a sudden decrease in blood pressure.
- Inform the woman that she may experience headache, palpitations and flushing.

## **Monitoring**

- Baseline observations TPR then 30 minutes or as clinically indicated
- BP taken on manual sphygmomanometer, repeat every 5 minutes for 20 minutes then reduce to 30 mins until stable
- Continuous electronic foetal monitoring is maintained.

## **Continuous Infusion**

- If further treatment is required a continuous Hydralazine infusion may be prescribed following consultation with the Obstetric specialist.

## **Preparation of continuous infusion**

- Withdraw 5mls of Normal saline from a 100ml bag.
- Discard the 5mls
- Dilute 100mg of Hydralazine (5 ampoules) with 5mls of sterile water for injection.
- Draw up the 100mgs (5mls) of Hydralazine and inject into the 95mls of normal saline in the bag. Total volume 100mgs in 100mls.
- The IV infusion MUST be double-checked by a senior midwife prior to being connected to the woman, with specific attention to the '5 rights'.

## **Administration of Hydralazine Infusion**

- A normal saline mainline infusion is commenced.
- Using an electronic pump, the Hydralazine infusion is connected to the side arm of the normal saline infusion.
- The infusion is then started at a rate of 5mg (5ml) per hour
- Increase the rate of the infusion by 1mg (1ml) every 15 minutes (maximum 20mgs/hour) according to the response of the blood pressure. The aim is to decrease the diastolic blood pressure to 100mmHg or less.
- If the total hourly dosage is going to exceed 20mg, consult with the registrar or consultant on further treatment options.
- When the blood pressure has stabilised, i.e. a decrease in diastolic blood pressure to 100mmHg or less, sustained for 15minutes, reduce the Hydralazine every 15 minutes by 1mg (1ml).

## **Monitoring**

- Blood pressure and pulse every 15minutes and record on T.P.R. or high dependence chart.
  - Insert an indwelling catheter with an hourly urine bag attached.
  - Strict fluid input and output is recorded on the fluid balance chart.
  - Report any changes in the woman's condition immediately to the registrar.
- N.B. Do not use an automated device if blood pressure recordings are very high or very low as they tend to under estimate blood pressure recordings. An automated device is only recommended if the blood pressure is within normal limits.
- Ensure continuous foetal monitoring while the Hydralazine is in progress.

Once the maternal diastolic blood pressure is stabilised, i.e. <100mmHg reduce the level of monitoring following consultation with the medical team.