HUTT maternity
Hutt Valley Maternity Care

HUTT VALLEY DHB

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Intravenous Labetalol Use (For Severe Maternal Hypertension) 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

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

Background

Intravenous labetalol is intended for use in hospitalised women. It is a combined α and β adrenergic blocking agent that lowers blood pressure smoothly but rapidly without the tachycardia or CTG abnormalities characteristic of treatment with hydralazine. It may be given by intermittent bolus doses, or continuous infusion. The maximum effect usually occurs within 5 minutes and the duration of action is usually about 6 hours but may be as long as 18 hours.

Severe hypertension in pregnancy:
Systolic BP ≥ 170mm Hg
Diastolic BP ≥ 110mm Hg (SOMANZ 2008)

A randomised trial in 2006 showed labetalol to be associated with fewer maternal side effects (tachycardia and palpitations), but more neonatal complications (bradycardia and hypotension) than other antihypertensives; these did not contribute to worse outcome overall however. Both drugs were effective.

A systematic review found labetalol to be as efficacious as hydralazine, but there were only small numbers of women in the trials, limiting comparisons.
Contra-indications

- Known hypersensitivity to labetalol
- Severe bradycardia
- Second or third degree heart block
- Patients with a history of severe or brittle obstructive airway disease (eg asthma)
- Hypertensive episodes following myocardial infarction
- Cardiogenic shock

Severely impaired placental function and intrauterine growth restriction are relative contraindications and mandate continuous monitoring and caution with use.

Risks and precautions

1. Maternal hypotension

Risk factors include:

- Hypovolaemia - particularly in women with very severe pre-eclampsia In this setting consider a pre-treatment bolus of fluid (eg 500mL 0.9% normal saline)
- Epidural analgesia
- Known hypersensitivity to labetalol

2. Impaired placental blood flow/fetal compromise

As uterine blood flow is passive, maternal vasodilatation may result in fetal compromise when there is limited placental reserve, even prior to development of maternal hypotension.

3. Other potential maternal effects

- Postural hypotension
- Bradycardia and heart block (the latter is very rare)
- Rash, pruritus
- Angioedema and dyspnoea
- Nasal congestion
- Rarely, disturbance in liver function tests, hepatitis and hepatic necrosis
- Intravenous labetalol should be administered only in 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.
- Continuous electronic foetal monitoring is required
- If there is known fetal compromise, labetalol should be used with caution.
- Preparations not used within 24 hours of reconstitution must be discarded (manufacturer's recommendation).
- Intravenous labetalol is compatible with the following intravenous solutions:
    - 5% dextrose
    - 0.18% Sodium chloride and 4% dextrose
    - 0.3% Potassium chloride and 5% dextrose
    - Compound sodium lactate
    - Normal saline

Equipment

- 3 ampoules of Intravenous Labetalol
  (each ampoule containing 100 mg of labetolol in 20 ml) are mixed with 240 ml of normal saline giving a solution of 300 ml containing 300 mg of labetolol (1 ml = 1 mg)
- 50ml syringe
- 20 ml syringe
- 2 Intravenous giving sets
- 1 electronic infusion device

Procedure

- Upon diagnosis of severe uncontrolled hypertension the woman is transferred to delivery suite. The consultant obstetrician is informed.

- Intravenous access is established.
- Maternal and fetal electronic monitoring is established.
- Consider indwelling catheter in the setting of severe pre-eclampsia
- Contraindications for intravenous labetalol are established.
- Ensure patient is in the supine or left lateral position.
- A loading dose/bolus of intravenous labetalol is administered by the registrar (appendix 1). The aim is to achieve a blood pressure of 130-140/80-90.
- If there is inadequate response to the first bolus treatment, a second bolus may be administered and/or a labetalol infusion (appendix 2) may be commenced.
- The IV infusion MUST be double-checked prior to being connected to the woman, with specific attention to the '5 rights' which includes the IV line.
- Maternal and fetal monitoring is continued during treatment.

References

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pregnancy. Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD001449 (accessed 5/7/2007)

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Magee LA, Ornstein MP, von Dadelzen P.Management of hypertension in pregnancy. BMJ 1999; 318:1332-36

Vigil-De Gracia, P et al. Severe hypertension in pregnancy: hydralazine or labetalol. Eu J of O&G 2006; 128: 157-162

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

Quick Reference
Intravenous Labetalol Infusion

Indication:

- Emergency management of severe hypertension uncontrolled by oral antihypertensives.

Contraindications: (see protocol)

- Maternal cardiac disease, known hypersensitivity

Risks:

- Maternal hypotension, with impaired placental blood flow, fetal compromise
- Cautious use when IUGR, severe pre-eclampsia, maternal hypovolaemia and epidural analgesia

Procedure

1. Transfer to Delivery suite
2. Commence Electronic Fetal Monitoring
3. Discuss the patient with the consultant obstetrician
4. Registrar administration of a Loading Dose/bolus of intravenous labetalol
5. Registrar review and, if indicated, repeat the loading dose and/or commence a labetalol infusion.

Registrar or consultant administration only

Labetalol Loading Dose

Preparation

- A 1mg / ml solution should be used
- Dilute 50 mg of intravenous labetolol (ie: 10ml from ampoule 100mg / 20mls) in 40ml of normal saline (=> 50 mg of labetolol in 50 mls = 1mg / 1ml solution).
- Attach a completed medication added label to the 50 ml syringe.

Administration

- The registrar/ consultant administers the initial loading dose of 10-20mgs of intravenous labetalol (ie: 10 - 20mls from prepared loading solution) by slow intravenous injection over a period of 2 minutes to avoid a sudden decrease in blood pressure. (NB: if there is suspected pre-eclampsia related hypovolaemia, the lower dose is recommended and maternal volume expansion should be considered with normal saline.)
- This may be the only treatment required to control the blood pressure. The aim is to maintain a BP of 130-140/80-90 mmHg.
- If necessary, after 10 minutes observation, the registrar/consultant may administer another one or two bolus dose of 10-20mgs (10-20mls of leading dose solution).

Monitoring

- Initial blood pressure, then repeat blood pressure measurement every five minutes for 20 minutes.
- The aim is to maintain a BP of 130-140/80-90 mmHg.
- If stable, repeat blood pressure every 30minutes after the initial 20 mins.
- Continuous electronic foetal monitoring is maintained.
- Document on MEWs chart.

Continuous Labetalol Infusion

If further treatment is required a continuous labetalol infusion may be prescribed following consultation with the consultant obstetrician. A 1mg / ml solution should be used.

Preparation

- Add 200 mg (40mls = 2 ampoules of 100mg / 20ml ampoule of labetolol) to 160 ml of normal saline.
- The resultant 200ml solution contains 200mg labetolol hydrochloride (1mg/ml).
- 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 IV line.

Administration

- A normal saline mainline infusion is commenced.
- Using an electronic pump, the labetalol infusion is connected to the side arm of the normal saline infusion.
- The infusion is then started at a rate of 20mg/hour (20ml/hour)
- Double the rate of infusion every 30 minutes until a satisfactory response is obtained or a dose of 160mg/hour (160ml/hour) is reached. Occasionally higher doses may be necessary. The aim is to decrease the diastolic blood pressure to 100mmHg and ideally to maintain a BP of 130-140/80-90 mmHg.
- When the blood pressure has stabilised, ie. there has been a decrease in diastolic blood pressure to 100mmHg or less and this has been sustained for 15 minutes, reduce the labetalol every 15 minutes by 1mg/hr.

<u>Monitoring</u>

Maternal

- Blood pressure and pulse every 15 minutes, and record on the MEWs chart
- Insert an indwelling catheter with an hourly urine bag attached.
- Strict fluid input and output is recorded on the MEWs chart.
- Report any changes in the woman's condition immediately to the registrar.

NB. 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. Regular manual checks are mandatory.

Fetal

- Ensure continuous fetal monitoring while IV labetalol is in progress.
- Once the maternal diastolic blood pressure is stabilised, ie <100mmHg reduce the level of monitoring following consultation with the O&G registrar.