Clinical Guideline
Labetalol Infusion Regimen

Policy developed by: SA Maternal & Neonatal Community of Practice
Approved SA Health Safety & Quality Strategic Governance Committee on: 19 April 2016
Next review due: 19 April 2019

Summary
Clinical practice guideline on the use of intravenous Labetalol for the treatment of severe hypertension in the peripartum period

Keywords
labetalol, labetalol infusion regimen, hypertension, preeclampsia, systolic, diastolic, alpha-adrenoreceptors, beta-adrenoreceptors, severe hypertension, anti-hypertensive, infusion, regimen, blood pressure, clinical guideline

Policy history
Is this a new policy? N
Does this policy amend or update an existing policy? Y 2.0
Does this policy replace an existing policy? N
If so, which policies?

Applies to
All SA Health Portfolio

Staff impact
All Staff, Management, Admin, Students, Volunteers
All Clinical, Medical, Nursing, Allied Health, Emergency, Dental, Mental Health, Pathology

PDS reference
CG236

Version control and change history

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This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient’s medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with **consumers** in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

**Explanation of the aboriginal artwork:**
The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

**Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that Perinatal services prepare to respectively manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.**

In Australia, labetalol in the intravenous form is an unlicensed product and can only be obtained under individual contract with the pharmacy at each hospital

**Introduction**

> Parenteral hydralazine, labetalol and oral nifedipine are the most common drugs used to control acute, severe hypertension in women with preeclampsia
> Medical expert consensus recommends that antihypertensive treatment should be started in women with a systolic blood pressure over 160 mm Hg or a diastolic blood pressure over 110 mm Hg
> In women with other markers of potentially severe disease, treatment can be considered at lower degrees of hypertension
> Labetalol lowers blood pressure by blocking alpha-adrenoreceptors in peripheral arterioles and thereby reducing peripheral resistance. It also blocks beta-adrenoreceptors, notably in the heart
> Labetalol causes a dose related fall in blood pressure with minimal influence on the heart rate
> In randomised controlled trials, intravenous labetalol has been shown to have fewe
effects than intravenous hydralazine

**Indication**

- Treatment of severe hypertension during pregnancy or postpartum (> 160 mm Hg systolic or > 110 mm Hg diastolic) where oral treatment with labetalol or nifedipine has failed or is not tolerated

**Relative contraindications**

- Bronchial asthma or chronic obstructive airways disease

**Oral labetalol treatment**

- If the woman can tolerate oral medication, an initial 200 mg oral dose of labetalol can be given (decreases blood pressure within 30 minutes)
- A second oral dose can be given if needed in one hour
- If there is no response to oral treatment or if it cannot be tolerated, severe hypertension may need parenteral drug administration

### Intermittent bolus IV administration

- The aim is to reduce diastolic blood pressure by 10 mm Hg and to below 105 mm Hg in the first instance (over 20-40 minutes), and to maintain the blood pressure at or below that level

**Co-administration of oral labetalol 200 mg OR 20 mg nifedipine (NOT controlled release) is recommended while gaining intravenous access**

| Administration precautions | > Give intravenous fluid preload of 250 mL of either sodium chloride 0.9 % or Hartmann’s immediately before use  
> May be administered by a midwife under the supervision of a medical officer  
> The maximum labetalol bolus dose rate is 50 mg / minute  
> Extravasation of labetalol solution may cause ischaemia and necrosis (pH 3.5-4.2). Ensure line is patent before administration, and flush with sodium chloride 0.9 %  
> Incompatible with bicarbonate or alkaline solutions |
| --- | --- |
| Intermittent bolus dose | > Labetalol comes as 100 mg in 20 mL vials (5 mg / mL)  
> Draw up labetalol 100 mg (20 mL) undiluted  
> Use medication added sticker and label syringe “labetalol 100 mg in 20 mL”  
> Inject 20 mg (4 mL) over 2 minutes |
| Observations | > Record blood pressure and heart rate every 5 minutes until stable  
> The maximal effect usually occurs within 5 minutes of each injection  
> If no change in blood pressure, repeat labetalol 20 mg (4 mL) every 10 minutes (titrated to blood pressure) to a maximum of 4 doses (80 mg = 16 mL)  
> Once the blood pressure has stabilised, monitor blood pressure every hour for 4 hours then return to preeclampsia regimen |

**Intravenous labetalol infusion**

- If the blood pressure is not adequately controlled after 4 bolus doses, a continuous
Labetalol infusion regimen

Infusion may be required, either via a syringe driver or an infusion pump

<table>
<thead>
<tr>
<th>Syringe driver</th>
<th>Infusion pump</th>
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<tbody>
<tr>
<td><strong>Set up</strong></td>
<td><strong>Set up</strong></td>
</tr>
<tr>
<td>&gt; Draw up labetalol 200 mg (40 mL) undiluted</td>
<td>&gt; Withdraw 40 mL from a 100 mL bag of sodium chloride 0.9 %</td>
</tr>
<tr>
<td>&gt; Using medication added sticker write “labetalol 5 mg in 1 mL” and attach label to syringe</td>
<td>&gt; Draw up 200 mg labetalol (40 mL) and add to remaining 60 mL in the bag of sodium chloride 0.9 %</td>
</tr>
<tr>
<td></td>
<td>&gt; Using medication added sticker write “labetalol 2 mg in 1 mL in sodium chloride 0.9 % (labetalol 200 mg made up to 100 mL with sodium chloride 0.9 %)” and attach label to bag</td>
</tr>
</tbody>
</table>

**Syringe driver infusion dose**
> Start infusion at 4 mL / hour (20 mg / hour). Titrate to stabilise blood pressure by adjusting (doubling, maintaining or halving) the infusion as required every 30 minutes to a maximum dose of 32 mL / hour (160 mg / hour)
> Discontinue by weaning over 1-2 hours when blood pressure is consistently less than 155 / 95 mm Hg

**Infusion pump dose**
> Start infusion at 10 mL / hour (20 mg / hour). Titrate to stabilise blood pressure by adjusting (doubling, maintaining or halving) the infusion as required every 30 minutes to a maximum dose of 80 mL / hour (160 mg / hour)
> Discontinue by weaning over 1-2 hours when blood pressure is consistently less than 155 / 95 mm Hg

**Observations**
> Measure blood pressure and pulse every 15 - 30 minutes until stabilised, then record every hour as required
> If blood pressure decreases precipitously, halve the infusion rate or cease (depending on severity)
> Blood pressure should not be lowered below 140 / 85 mm Hg
> Continuous electronic fetal monitoring during intravenous administration

**Side effects**
> Hypotension: cease if blood pressure < 140 mm Hg systolic
> Bradycardia: cease if heart rate < 60/minute
> Fetal bradycardia
> Wheezing and bronchospasm: Cease if severe
> Headache and nausea

> Extravasation of labetalol solution may cause tissue damage. Stop and seek urgent assistance to resite the IV
> Blurred vision and/or retention of urine may occasionally be seen, as may scalp tingling
may last up to 24-48 hours

> Prolonged maternal high doses of labetalol may cause hypotension in the preterm growth restricted newborn

Postpartum care

> Anti-hypertensive medication should be continued after birth according to the blood pressure. Although, initially, blood pressure may fall, it usually rises again at around 24 hours postpartum

> A reduction in anti-hypertensive medication should be made in a stepwise fashion

> Labetalol is acceptable to use in breastfeeding. Although there are no known reported adverse effects on breastfed infants, consideration should be given to observing for signs for hypotension, bradycardia, hypoxemia and weakness, especially in preterm infants

References

5. MIMS Online. Labetalol hydrochloride. CMPmedica; Sydney. Australia; 2014.
## Abbreviations

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<tr>
<td>CEMACH</td>
<td>Confidential Enquiry into Maternal and Child Health</td>
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<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>mg</td>
<td>Milligram(s)</td>
</tr>
<tr>
<td>mL</td>
<td>Millilitre(s)</td>
</tr>
<tr>
<td>mm Hg</td>
<td>Millimetres of mercury</td>
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<tr>
<td>MOET</td>
<td>Managing obstetric emergencies and trauma</td>
</tr>
<tr>
<td>%</td>
<td>Percent</td>
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<tr>
<td>RCOG</td>
<td>Royal College of Obstetricians and Gynaecologists</td>
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