South Australian Perinatal Practice Guidelines

# Labetalol infusion regimen



**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

- 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[1]
- 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 fewer side 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

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

| Syringe driver | Infusion pump |
|---|---|

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| | |
|---|---|
| **Set up**<br>> Draw up labetalol 200 mg (40 mL) undiluted<br>> Using medication added sticker write "labetalol 5 mg in 1 mL" and attach label to syringe | **Set up**<br>> Withdraw 40 mL from a 100 mL bag of sodium chloride 0.9 %<br>> Draw up 200 mg labetalol (40 mL) and add to remaining 60 mL in the bag of sodium chloride 0.9 %<br>> 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 |
| **Syringe driver infusion dose**<br>> 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)<br>> Discontinue by weaning over 1-2 hours when blood pressure is consistently < 155 / 95 mm Hg | **Infusion pump dose**<br>> 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)<br>> Discontinue by weaning over 1-2 hours when blood pressure is consistently < 155 / 95 mm Hg |
| **Observations**<br>> Measure blood pressure and pulse every 15 - 30 minutes until stabilised, then record every hour as required<br>> If blood pressure decreases precipitously, halve the infusion rate or cease (depending on severity)<br>> Blood pressure should not be lowered below 140 / 85 mm Hg<br>> Continuous electronic fetal monitoring during intravenous administration | |
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## Side effects

- Hypotension: cease if blood pressure < 140 mm Hg systolic
- Bradycardia: cease if heart rate < 60/minute
- Wheezing and bronchospasm: Cease if severe
- Headache and nausea

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- 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 that may last up to 24-48 hours
- Fetal bradycardia
- 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

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## Abbreviations

| | |
|---|---|
| APPG | Australian Product Prescription Guide |
| CEMACH | Confidential Enquiry into Maternal and Child Health |
| IV | Intravenous |
| mg | Milligram(s) |
| mL | Millilitre(s) |
| mm Hg | Millimetres of mercury |
| MOET | Managing obstetric emergencies and trauma |
| % | Percentage |
| RCOG | Royal college of Obstetricians and Gynaecologists |

## Version control and change history

**PDS reference:** OCE use only

| Version | Date from | Date to | Amendment |
|---|---|---|---|
| 1.0 | 29 Sept 09 | 18 Sept 12 | Original version |
| 2.0 | 18 Sept 12 | Current | Reviewed |
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