

# ZIDOVUDINE

## Indication

- Prevention of human immunodeficiency virus (HIV) infection in newborn
- Prevention of maternal-fetal HIV transmission in HIV positive women
- Low risk newborn whose mother:
  - Has an undetectable viral load at birth (less than 40 copies per mL)
- High risk newborn whose mother:
  - Has detectable viral load at birth
  - Is not on therapy, presents late/in labour or without testing available
  - Has HIV infection detected post-partum

## Presentation

- Oral solution 10 mg/mL

## Low risk dosage

(mother had viral load of less than 40 copies per mL at birth)

- Dose and frequency according to gestation<sup>1</sup>

Gestational age (weeks)	Dose
29+6 or less	2 mg/kg every 12 hours for 4 weeks
30+0 to 34+6	2 mg/kg every 12 hours for 2 weeks THEN
	2 mg/kg every 8 hours for 2 weeks (Total=4 weeks)
35+0 or more:	4 mg/kg every 12 hours for 4 weeks

## High risk dosage

(mother had detectable viral load, or not on therapy, or no testing, or detected post-partum)

- Dose and frequency according to gestation<sup>1</sup>

Gestational age (weeks)	Dose
29+6 or less	2 mg/kg every 12 hours for 2 weeks THEN
	3 mg/kg every 12 hours for 2 weeks (Total 4 weeks)
30+0 to 34+6	2 mg/kg every 12 hours for 2 weeks THEN
	2 mg/kg every 8 hours for 2 weeks (Total=4 weeks)
35+0 or more:	4 mg/kg every 12 hours for 4 weeks

## Preparation

- Nil required


## Administration

- Draw up prescribed dose
- Oral/OGT/NGT without regard to feeds<sup>2</sup>



ORAL

<b>INTRAVENOUS</b>	<b>Indication</b>	<ul style="list-style-type: none"> <li>If unwell and/or cannot tolerate enteral medication             <ul style="list-style-type: none"> <li>Change to oral route to complete 4 week course (when able)</li> </ul> </li> </ul>														
	<b>Presentation</b>	<ul style="list-style-type: none"> <li>Vial 200 mg/20 mL</li> </ul>														
	<b>Dosage</b>	<ul style="list-style-type: none"> <li>Dose and frequency according to gestation and days of life<sup>1</sup></li> </ul> <table border="1"> <thead> <tr> <th>Gestational age (weeks)</th> <th>Days of life (days)</th> <th>Dose</th> </tr> </thead> <tbody> <tr> <td>29+6 or less</td> <td>0–28</td> <td>1.5 mg/kg every 12 hours<sup>1</sup></td> </tr> <tr> <td rowspan="2">30+0 to 34+6</td> <td>0–14</td> <td>1.5 mg/kg every 12 hours</td> </tr> <tr> <td>15–28</td> <td>2.3 mg/kg every 12 hours</td> </tr> <tr> <td>35+0 or more</td> <td>0–28</td> <td>1.5 mg/kg every 6 hours<sup>1</sup></td> </tr> </tbody> </table>	Gestational age (weeks)	Days of life (days)	Dose	29+6 or less	0–28	1.5 mg/kg every 12 hours <sup>1</sup>	30+0 to 34+6	0–14	1.5 mg/kg every 12 hours	15–28	2.3 mg/kg every 12 hours	35+0 or more	0–28	1.5 mg/kg every 6 hours <sup>1</sup>
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<b>Preparation</b>	<ul style="list-style-type: none"> <li>Draw up double the prescribed dose and make up to 5 mL total volume with 5% glucose</li> <li>Prime infusion line and reduce the total syringe volume to 2.5 mL             <ul style="list-style-type: none"> <li><i>Volume now equal to the prescribed dose</i></li> </ul> </li> </ul>															
<b>Administration</b>	<ul style="list-style-type: none"> <li>IV infusion via syringe driver infusion pump over 60 minutes             <ul style="list-style-type: none"> <li>On completion, disconnect syringe and infusion line</li> <li>Flush access port at same rate as infusion</li> </ul> </li> </ul>															

<b>Special considerations</b>	<ul style="list-style-type: none"> <li>Monotherapy for low risk baby             <ul style="list-style-type: none"> <li>Commence as soon as possible after birth (within 4–12 hours of birth)</li> </ul> </li> <li>Component of 3 drug treatment for high risk baby             <ul style="list-style-type: none"> <li>Commence as soon as possible after birth</li> <li>If HIV diagnosed late, commence no later than 72 hours after birth</li> </ul> </li> <li>Contraindication             <ul style="list-style-type: none"> <li>Abnormally low neutrophil count or haemoglobin level<sup>3</sup></li> </ul> </li> <li>Caution: mitochondrial toxicity             <ul style="list-style-type: none"> <li>Two out of 200 babies receiving ART to prevent vertical transmission, developed an extremely rare and fatal neurological disease<sup>4</sup></li> <li>Not confirmed elsewhere, although the potential for nucleoside analogues to interfere with mitochondrial function is recognised<sup>4</sup></li> <li>Consider the possibility of mitochondrial toxicity in babies exposed to ART who present unwell to a clinical service<sup>1</sup></li> <li>Manifestations include lactic acidosis and disturbed neurological findings<sup>1</sup></li> </ul> </li> <li>If severe renal impairment, may need dose adjustment<sup>2</sup></li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>Nil required</li> </ul>
<b>Compatibility</b>	<ul style="list-style-type: none"> <li>Fluids<sup>5</sup> <ul style="list-style-type: none"> <li>5% Glucose, 0.9% sodium chloride</li> </ul> </li> <li>Y-site<sup>5</sup> <ul style="list-style-type: none"> <li>Aciclovir, amikacin, aztreonam, cefepime, ceftazidime, ceftriazone, cisatracurium, clindamycin, trimethoprim-sulfamethoxazole (co-trimoxazole), dexamethasone, dobutamine, dopamine, erythromycin, fluconazole, gentamicin, granisetron, heparin, imipenem-cilastatin, linezolid, metoclopramide, morphine, piperacillin-tazobactam (EDTA-free), potassium chloride, ranitidine, tobramycin, vancomycin</li> </ul> </li> </ul>
<b>Incompatibility</b>	<ul style="list-style-type: none"> <li>Fluids             <ul style="list-style-type: none"> <li>Biological or colloidal fluids such as blood products and protein solutions<sup>5</sup></li> </ul> </li> <li>Drugs             <ul style="list-style-type: none"> <li>Meropenem<sup>5</sup></li> </ul> </li> </ul>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>Aciclovir, amikacin, valproate<sup>6</sup></li> </ul>
<b>Stability</b>	<ul style="list-style-type: none"> <li>Oral solution             <ul style="list-style-type: none"> <li>Store at 25 °C. Protect from light<sup>7</sup></li> </ul> </li> <li>Intact vials             <ul style="list-style-type: none"> <li>Store at 15–25 °C. Protect from light<sup>7</sup></li> </ul> </li> <li>Diluted intravenous solution             <ul style="list-style-type: none"> <li>Stable for 24 hours at room temperature and 48 hours when stored at 2–8 °C<sup>5</sup></li> </ul> </li> </ul>

<b>Side effects<sup>6</sup></b>	<ul style="list-style-type: none"> <li>• Hypersensitivity: rash, urticaria, fever, myalgia, arthralgia</li> <li>• Blood pathology: anaemia, neutropenia, thrombocytopenia</li> <li>• Digestive: pancreatitis, liver damage, abdominal pain, flatulence, vomiting, diarrhoea</li> <li>• Respiratory: cough, dyspnoea</li> <li>• Skeletal: osteonecrosis</li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>• Antiretroviral agent</li> <li>• Highly active <i>in vitro</i> against retroviruses including HIV</li> </ul>
<b>Abbreviations</b>	ART: antiretroviral treatment; HIV: human immunodeficiency virus
<b>Keywords</b>	zidovudine, retrovir, retrovir syrup, HIV, anti-retroviral, human immunodeficiency virus

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

1. Queensland Children's Hospital. Management of newborns born to women with HIV (human immunodeficiency virus) infection (CHQ-GDL-01243 v3.0). [Internet]. 2018 [cited 2019 February 20]. Available from: <https://gheps.health.qld.gov.au/childrenshealth/>.
2. IBM Micromedex® Neofax®. Zidovudine. In: IBM Micromedex® NeoFax®/Pediatrics (electronic version). IBM Watson Health, Greenwood Village, Colorado, USA. January 2019 [cited 2019 May 20]. Available from: <http://neofax.micromedexsolutions.com/neofax>.
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4. Blanche S, Tardieu M, Rustin P. Persistent mitochondrial dysfunction and perinatal exposure to antiretroviral nucleoside analogues. *Lancet* 1999;354(9184):1084-9.
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6. British National Formulary for Children (BNFC) online. Zidovudine. [Internet]: Royal Pharmaceutical Society; September 2016 [cited 2018 September 06]. Available from: <https://www.medicinescomplete.com>.
7. American Society of Health-System Pharmacists. Handbook on Injectable Drugs. 19th ed: American Society of Health-System Pharmacists; 2017.

## Document history

ID number	Effective	Review	Summary of updates
NMedQ19.018-V1-R24	01/08/2019	01/08/2024	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)