

NEW
QUICK AND EASY PREPARATION!

Injectable artesunate FOR SEVERE MALARIA ONLY

WHO
RECOMMENDED
TREATMENT

ADVANTAGES:

- easier preparation
- faster to use

PRODUCT DESCRIPTION



Artesunate powder (60 mg) + **Arginine (20 mg/ml) / sodium bicarbonate (8.4 mg/ml)**

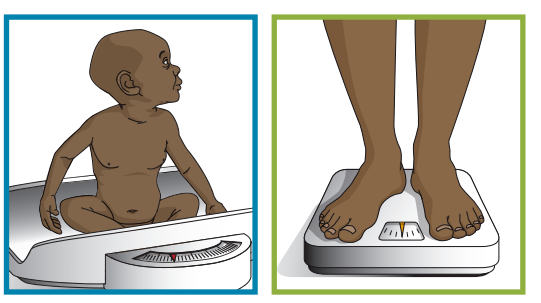
Dose for children weighing less than 20 kg:

3.0 mg/kg

Dose for persons weighing more than 20 kg:

2.4 mg/kg

1 WEIGH THE PATIENT



Calculate the dose using patients' weight.
The health worker administering the artesunate must check the calculation to confirm that it is correct.

2 CALCULATE DOSE (in mls)

Same concentration for both **intravenous route (IV)** and **intramuscular route (IM)**: 20 mg/ml

Less than 20 kg
3.0 mg/kg

IV & IM concentration: 20 mg/ml

$3.0 \text{ mg} \times \text{body weight (kg)}$
IV / IM artesunate solution concentration **20 mg/ml**

Example for 8 Kg child:
 $\frac{3.0 \times 8}{20} = 1.2 \text{ mls}$
1.2 ml rounded up to **2 mls**

For patients less than 20 kg

| Weight kg | Dose | |
|-----------|------|----|
| | mg | ml |
| 0 - 7 | 20 | 1 |
| 7 - 10 | 30 | 2 |
| 11 - 13 | 40 | 2 |
| 14 - 16 | 50 | 3 |
| 17 - 20 | 60 | 3 |

Remark: the upper limit for each weight band is 0.9 kg. e.g. 14 - 16 kg covers 14 - 16.9 kg.

More than 20 kg
2.4 mg/kg

IV & IM concentration: 20 mg/ml

$2.4 \text{ mg} \times \text{body weight (kg)}$
IV / IM artesunate solution concentration **20 mg/ml**

Example for 26 Kg child:
 $\frac{2.4 \times 26}{20} = 3.12 \text{ mls}$
3.12 ml rounded up to **4 mls**

For patients over 20 kg

| Weight kg | Dose | |
|-----------|------|----|
| | mg | ml |
| 20 - 25 | 60 | 3 |
| 26 - 29 | 70 | 4 |
| 30 - 33 | 80 | 4 |
| 34 - 37 | 90 | 5 |
| 38 - 41 | 100 | 5 |
| 42 - 45 | 110 | 6 |
| 46 - 50 | 120 | 6 |
| 51 - 54 | 130 | 7 |
| 55 - 58 | 140 | 7 |
| 59 - 62 | 150 | 8 |
| 63 - 66 | 160 | 8 |
| 67 - 70 | 170 | 9 |
| 71 - 75 | 180 | 9 |
| 76 - 79 | 190 | 10 |
| 80 - 83 | 200 | 10 |
| 84 - 87 | 210 | 11 |
| 88 - 91 | 220 | 11 |
| 92 - 95 | 230 | 12 |
| 96 - 100 | 240 | 12 |

Rounding up: to ensure an effective therapeutic dose, it is recommended to round up to the next whole number for any dose above a whole number.

What if a syringe with 0.10 decimales measurement is available? Should the dose be rounded up?
If your hospital uses syringe with 0.10 decimales allowing to withdraw the precise dose, then administer the exact dose.

3 CHECK NUMBER OF VIALS NEEDED

| Weight | Number of vials (60 mg) |
|-----------------|-------------------------|
| Less than 25 kg | 1 vial |
| 26-50 kg | 2 vials |
| 51-75 kg | 3 vials |
| 76-100 kg | 4 vials |



Use a portion of a vial or a whole vial depending on the weight of your patient. Expect some wastage, since any unused solution must be discarded, unless used for another patient within an hour.

4 RECONSTITUTE

Add 3 mls ampoule of arginine/sodium bicarbonate buffer to the artesunate powder. This activates the drug. Thereafter the drug is ready to use. **There is NO further dilution.**

A Prepare the required vials and ampoules for reconstitution.

B Withdraw the full 3 mls content from the ampoule & inject into the artesunate vial.

C Shake gently until dissolved. The solution will be cloudy.

D The reconstituted solution will clear in about 2 mins. Discard if not clear.

| | |
|---|-------------|
| Artesunate powder | 60 mg |
| Arginine/sodium bicarbonate buffer | 3 ml |
| Total volume of reconstituted drug | 3 ml |

| | |
|---|---------------------|
| Artesunate 60 mg solution (with buffer) | 60 mg/3ml = 20mg/ml |
|---|---------------------|

IMPORTANT
SAME CONCENTRATION FOR IV AND IM

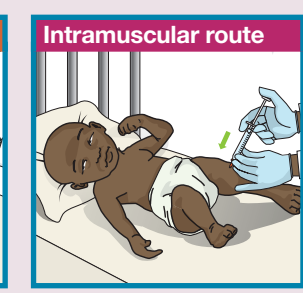
5 ADMINISTER

Withdraw the required dose (ml) from the prepared vial(s) :

| mls | 1-4 mls | 4.1-8 mls | 8.1-12 mls |
|-----------------|----------|-----------|------------|
| minutes to push | 1 minute | 2 minutes | 3 minutes |



Slow injection 3-4 mls per minute.



Inject in an appropriate IM site. Use a different site for each dose greater than 3-5 mls.



Is injectable artesunate safety adequate in pregnancy?

Severe malaria is especially hazardous during pregnancy, therefore full dose of parenteral artesunate treatment should be administered at any stage of pregnancy without delay.

- IMPORTANT**
- Follow sterile procedures for all steps.
 - Double check dose required (mls) for patient's weight (kg) before injecting.
 - Each vial requires separate reconstitution.
 - Use full content of arginine/sodium bicarbonate buffer vial/ampoule.
 - Do not shake too vigorously.
 - Discard if solution does not clear.
 - Inject immediately after preparation.
 - Ensure the intravenous line is patent by flushing the line **before and after** administration.
 - Discard any solution not used within 1 hour.
 - Prepare a fresh solution for each administration.

DOSING SCHEDULE

Give a minimum of 3 mandatory intravenous parenteral doses (IV or IM) over 24 hours as indicated below:

| Day | Dose | Hour |
|-------|--|--|
| Day 1 | Dose 1 | 0 hours - On admission |
| | Dose 2 | 12 hours after Dose 1 |
| Day 2 | Dose 3 | 24 hours after Dose 1 |
| Day 3 | Patient able to swallow ACT oral medication? | |
| | YES | Give oral antimalarial (ACT) for 3 days 8-12 hours after the last injectable artesunate dose. |
| | NO | Continue dosing every 24 hours /once per day, (for a maximum of 7 days) until the patient is able to take oral ACT medication. |
| | | Give oral antimalarial (ACT) for 3 days 8-12 hours after the last injectable artesunate dose. |

*** Oral ACT – what are they and what are they used for?**
Artemisinin-based combination therapy or ACT are combination drugs used to treat uncomplicated *P.falciparum* malaria or to complete the treatment of severe malaria after administration of injectable artesunate.

- The ones you are familiar with are:
- artemether plus lumefantrine
 - artesunate plus amodiaquine
 - artesunate plus mefloquine
 - artesunate plus sulfadoxine-pyrimethamine
 - dihydroartemisinin plus piperaquine
 - artesunate plus pyronaridine

These are combination drugs because they combine artemisinin derivatives with compounds that are eliminated more slowly.

IMPORTANT
Injectable artesunate must always be followed by a 3-day course with an ACT. This is to mitigate the risk of resistance development.

Finding effective medications to treat severe malaria takes decades of research. Please use medications with care and help us prevent resistance to these life saving medicines.

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Note: This document is intended to demonstrate to health workers how to prepare and administer the novel IV injectable artesunate, a treatment for severe malaria. It is not intended to provide personal medical advice. The responsibility for the interpretation and use of this material lies with the reader. In no event shall MMV be liable for damages arising from its use. © 2023 Medicines for Malaria Venture (MMV). All rights reserved. A copy of this document can only be made upon MMV's written authorization.

