

# CALCULATION TOOL FOR THE PRESCRIPTION OF INTRAVENOUS SALBUTAMOL IN CHILDREN

Weight in kg =

Patient ID sticker

When administering IV Salbutamol infusion a standard solution of strength 200micrograms per millilitre is always used (the method of preparation is outlined in step 4 of this protocol). The exact dose for the patient in question is then given by adjusting the RATE of infusion.

## Step 1: Calculate Loading dose

### AGE UNDER 2yrs

The BNFC recommends a loading dose of 5microgram/kg **over 5 minutes** in those aged under 2yrs.

This is calculated as follows:

a) Dose to be administered in micrograms = 5 x  Kg =  micrograms  
Box A

Assuming use of the standard salbutamol solution (200micrograms/ml) prepared in Step 4, the VOLUME of solution to be given is calculated as follows:

b) Volume of salbutamol solution to be administered =  divided by 200 =  millilitres  
Box A Box B

### AGE 2yrs and OVER

The BNFC recommends a loading dose of 15 microgram/kg **over 5 minutes** in those age 2yrs and over, with a **maximum dose of 250micrograms (or 1.25ml of 200micrograms/ml solution)**

This is calculated as follows:

a) Dose to be administered in micrograms = 15 x  Kg =  micrograms  
Box A  
**Max dose = 250micrograms**

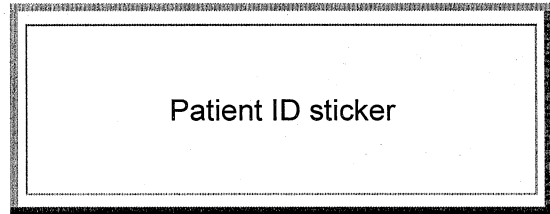
Assuming use of the standard salbutamol solution (200micrograms/ml) prepared in Step 4, the VOLUME of solution to be given is calculated as follows:

b) Volume of salbutamol solution to be administered =  divided by 200 =  millilitres  
Box A Box B  
**Max volume = 1.25ml**

**CALCULATION TOOL FOR THE PRESCRIPTION OF INTRAVENOUS SALBUTAMOL IN CHILDREN (cont.)**

Weight in kg =

wt



**Step 2: Calculate maintenance infusion rate**

*The usual dose range as stated in BNFC is 60 to 300 micrograms/ kg/ hour which equates to 1 to 5 micrograms/ kg/ minute*

Usual dose range = 1 to 5 (micrograms per kg per minute)

1 microgram/kg/minute = 0.3ml/kg/hr of our standard salbutamol solution (as prepared below in step 4)

**Therefore the maintenance infusion rate range (in ml per hour) can be calculated as follows:**

$$\text{Lower limit of dose range} = 1 \times 0.3 \times \text{wt} = \text{C}$$

Box C

$$\text{Upper limit of dose range} = 5 \times 0.3 \times \text{wt} = \text{D}$$

Box D

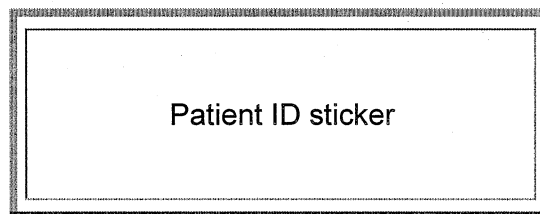
The maintenance infusion should be commenced at  $\text{C}$  mls per hour and increased

Box C

according to clinical response to a maximum of  $\text{D}$  mls per hour.

Box D

**CALCULATION TOOL FOR THE PRESCRIPTION OF INTRAVENOUS SALBUTAMOL IN CHILDREN (cont.)**



Patient ID sticker

**Step 3: Use the above calculations to prescribe loading dose and maintenance infusion**

As with all complex calculations, please check back your calculations before prescribing to ensure the correct dose is being administered.

**LOADING DOSE**

*To be written on the 'Once Only' section of child's drug prescription chart as below.*

Date	Medicine	Dose	Route	Time to be given	Signature
	Salbutamol (200 micrograms per ml solution)	<input type="text" value="B"/> ml	iv	Over 5 minutes	

**MAINTENANCE DOSE**

*To be prescribed on the child's intravenous fluid prescription sheet using the guide below. For larger children, a bigger volume of salbutamol solution may be required (see Step 4).*

Date/time	iv fluid (inc. volume)	Additive (inc.dosing)	Rate mls/hr	Signature
	Sodium Chloride 0.9% (50ml)	Salbutamol 10mg	<input type="text" value="C"/> to <input type="text" value="D"/>	

**Monitoring information:**

Ensure all children on intravenous salbutamol are on a cardiac monitor and have serum electrolytes checked regularly to ensure they do not become hypokalaemic. The majority of these children will require intravenous fluids with added potassium to maintain serum potassium levels.

**CALCULATION TOOL FOR THE PRESCRIPTION OF INTRAVENOUS SALBUTAMOL IN CHILDREN (cont.)**

**Step 4: Make up standard salbutamol solution of correct volume**

**To prepare 50ml of standard 200micrograms/ml solution:**

Draw up 10ml of 1mg/ml salbutamol into a 50ml syringe and make up to a total volume of 50ml using 0.9% Sodium chloride (giving a concentration of 200 micrograms per ml).

**Alternatively if you need > 50ml, prepare 250ml of standard 200microgram/ml solution:**

A larger volume solution of the same strength may be made up by withdrawing and discarding 50ml from a 250ml bag of Sodium Chloride 0.9% and adding 50ml of 1mg/ml Salbutamol to the remaining contents of the bag (also giving a concentration of 200 micrograms per ml).

**References:**

BNF-C 2008

Southampton PICU Infusion guide 2008-2010