

# Paediatric Retrieval Team Information

More information on the team can be found on their website.

[www.snprs.scot.nhs.uk/index.html](http://www.snprs.scot.nhs.uk/index.html)

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**Pre arrival of the retrieval team**

- Notes photocopied
- Nasogastric/Orogastric tube in place if child is ventilated
- Chest x ray if applicable
- IV access x 2 if possible
- Recent blood glucose
- Recent temperature
- Information booklet given to parents about retrieval
- Information given to parents about travel to Edinburgh/Glasgow

**ET Tube Sizing**

AGE	SIZE	LENGTH (ORAL)
Newborn	3 – 3.5mm	9cm
2 months	3.5mm	10cm
6 months	3.5mm	11cm
1 year	4mm	12cm
18 months	4.5mm	13cm
2 years	4.5 – 5mm	14cm
4 years	5 – 5.5mm	15cm
6 years	5.5 – 6mm	16cm
8 years	6 – 6.5mm	17cm
10 years	6.5 – 7mm cuffed	18cm
12 years	7 – 7.5mm cuffed	20cm

**FORMULA FOR TUBE SIZING OVER 1 YEAR OF AGE**

**AGE DIVIDED BY 4 PLUS 4**

## Nasogastric tubes

Most ventilated children will require a nasogastric or orogastric tube to be passed prior to retrieval.

Generally a size 8Fr will be suitable for infants and a size 10Fr for older children.

An orogastric tube should be passed on head injured children rather than a nasogastric tube due to the possibility of a basal skull fracture.

The length of the tube should be measured from the umbilicus to the tip of the nose and out to the ear. Correct placement should be ascertained by testing for an acid reaction and can be verified by checking the X ray following intubation.

The tube should be left on free drainage for transport and aspirated regularly.

## Suction Catheters

The most simple way to assess the correct size of suction catheter is to double the size of the ET tube.

Example: A child with a size 4 ET tube will require a size 8 Fr suction catheter.

Suctioning may cause hypoxia and bradycardia particularly in small infants and it is therefore important that the heart rate and oxygen saturations are monitored throughout.

It is also important that the ET tube does not block and the instillation of approximately 0.5mls 0.9% Saline prior to suctioning will help.

The amount and consistency of the secretions should determine the frequency of suctioning.

# Scottish Paediatric Retrieval Service

## A GUIDE TO SOME PAEDIATRIC SIZES AND DOSES USED IN ANAESTHESIA AND RESUSCITATION

Age	Typical Weights Kg	ETT Bore mm	Length ORAL cm	NASAL cm	Basal fluid ml/kg/hr	Ventilation Settings	Laryngeal Mask	Max size Suction catheter
Prem	2	2.5	8	9.5	3			5
Newborn	3	3	9	11	3	Rate30/min		6
2/12	4.5	3.5	10	11.5	4		1 rarely used	7
6/12	7	3.5	11	12.5	4	Rate25/min	1.5	7
1year	10	4	12	14	4	Rate20/min	1.5	8
18/12	12	4.5	13	15	3		2	8
2	15	4.5 -5	14	16	3		2	8
4	17	5 - 5.5	15	17	3		2	10
6	21	5.5 - 6	16	19	3	Rate16/min	2	10
8	25	6 - 6.5	17	20	2.5	V <sub>T</sub> 10-15mls/kg	2.5	12
10	31	6.5 - 7	18	21	2.5	Paw 15-25	2.5	12
12	40	7 - 7.5	20	23	2	cm H <sub>2</sub> O	3	14

### Top up Blood Transfusion:

RCC @4mls/kg/1g rise in Hb reqd  
Total BLOOD VOLUME 80mls/kg

### Resuscitation in BURNS:

#### 1st 24hrs Parkland Formula

Hartmann's @ 4mls x kg x % area burn  
½ over first 8hrs  
½ over next 16hrs

#### In addition to maintenance fluids

0.45% NaCl + 5% Glucose  
4ml/kg 1<sup>st</sup> 10kg + 2ml/kg 10-20kg  
+1ml/kg each kg after 20kg

### ANAESTHETIC DRUGS

Thiopentone 4-6mg/kg  
Propofol 2-5mg/kg  
Ketamine 2mg/kg (5-10mg/kg IM)  
Glycopyrrolate 0.01mg/kg  
Suxamethonium 1-2mg/kg  
Atracurium 0.5mg/kg  
Mivacurium 0.1-0.2mg/kg  
Vecuronium 0.1mg/kg  
Rocuronium 0.5mg/kg  
Neostigmine 0.04mg/kg

Fentanyl 2-5mcg/kg  
Remifentanyl 0.1-1mcg/kg/min  
Codeine (IM) 1-1.5mg/kg (not IV)  
Morphine 40-100mcg/kg  
Alfentanil 20-50mcg/kg  
IV Paracetamol 15mg/kg  
[max 60mg/kg/24]

### INFUSIONS

#### MORPHINE

Body wt in kg = mg in 50mls NaCl

(up to 50mg in 50mls)

Run at 10 - 40mcg/kg/hr = 0.5 - 2mls/hr

If + Cyclizine 1mg/kg then make up in 5% Glucose

#### RELAXANT/ FENTANYL

Vecuronium 10mg + Fentanyl 500mcg in 10mls at 0.1ml/kg/hr  
(gives Vec 0.1mg/kg/hr + Fent 5mcg/kg/hr)

Atracurium 50mg + Fentanyl 200mcg in 10mls at 0.1ml/kg/hr  
(gives Atrac 0.5mg/kg/hr + Fent 2mcg/kg/hr)

#### SEDATION Midazolam 0.1-0.2mg/kg/hr

Clonidine 0.1-0.5mcg/kg/hr (0.3mg/kg in 50mls)

#### EPIDURAL 0.1% Bupivacaine + Fentanyl 2mcg/ml 0.2 - 0.4ml/kg/hr

Magnesium Sulphate 50mg/kg (0.2mmol/kg) dilute to 10%  
(100mg in 1ml) with 5% glucose give IV over 10- 15min : 25mg/kg/hr

mcg = micrograms

### RESUSCITATION DRUGS

Adrenaline(1/10,000) 0.1ml/kg  
Atropine 0.02mg/kg  
Ca Chloride(10%) 0.2ml/kg  
Na Bicarb(8.4%) 1ml/kg  
{1/2 correct[Base XS x kg x 0.3] x 0.5}  
Glucose(10%) 3 - 5ml/kg  
{HYPERKALAEMIA + Insulin 0.1 unit/kg}

### HYPOVOLAEMIC SHOCK:

Initial Fluid Infusion N.Saline 20mls/kg  
then PPS

### DC Defibrillation 4 joules / kg

### SEDATION (oral)

Alimemazine 2-3mg/kg [ max 90mg]  
Diazepam 0.25-0.5mg/kg [max10mg]  
Midazolam 0.5mg/kg [max20mg]  
Chloral / Triclofos 30-50mg/kg [max2g]  
Clonidine[1<sup>st</sup> dose 1mcg/kg] 1-5mcg/kg 8hrly

### ANALGESICS

Paracetamol 15mg/kg 4-6hrly [max 90mg/24]  
<3months [max 60mg/24]  
Ibuprofen 5-10mg/kg 6-8hrly  
Diclofenac(O/PR) 1-2mg/kg [max1mg/kg/8hrly]  
Codeine(O/PR) 1mg/kg 4hrly [max 240mg/24]  
Dihydrocodeine 0.5-1mg/kg 6hrly [max 30mg]  
Morphine >1yr 0.2-0.3mg/kg (oral)[max10mg]  
Morphine(IM/IV) <1yr 0.1mg/kg  
{reduce IV dose with GA} >1yr 0.2mg/kg  
IV : Dilute dose in 10mls NaCl give slowly  
Naloxone 10mcg/kg  
Flumazemil 10mcg/kg

### A&E [ over 1yr only]

Intranasal Diamorphine 0.1mg/kg  
In vol of 0.2ml when no IV access

Aminophylline 5mg/kg  
Chlorphenamine 0.1-0.25mg/kg  
Hydrocortisone 4mg/kg  
Furosemide 1mg/kg  
Mannitol(10%) 5ml/kg (0.5g/kg)  
Cyclizine 1mg/kg  
Dexamethasone 0.15mg/kg  
Metoclopramide 0.15mg/kg  
Ondansetron 0.1mg/kg  
Prochlorperazine 1-4yrs 2.5mg PR  
5-12yrs 5mg PR

### ANTIBIOTICS

(Loading Dose)

Amoxycillin (SBE) 50mg/kg oral or 25mg/kg IV  
Ampicillin 50mg/kg  
Augmentin 30mg/kg  
Benzylpenicillin 30mg/kg  
Cefotaxime 50mg/kg  
Ceftriaxone 50-80mg/kg  
Cefuroxime 30mg/kg  
Clarithromycin (Pen allergy) 7.5mg/kg(infusion)  
Clindamycin (SBE)\* 5mg/kg (over 1/2hr)  
Flucloxacillin 25mg/kg  
Gentamicin 2-5mg/kg  
Metronidazole 7.5mg/kg  
Vancomycin 15mg/kg(over 1hr)  
\* Penicillin allergy or if amoxycillin in prev month

### SEIZURES

Lorazepam 0.1mg/kg[max4mg]  
Midazolam (buccal / nasal) 0.2mg/kg[max10mg]

Diazepam 0.2-0.3mg/kg[max10-20mg]

### LOCAL ANAESTHETICS (max dose)

Levobupivacaine 2.5mg/kg/6hrs  
(1ml/kg of 0.25% or 0.5ml/kg of 0.5%)  
Lignocaine 3mg/kg (0.3ml/kg 1%)  
+ Adrenaline 7mg/kg (0.7ml/kg 1%)  
CAUDAL: 0.25% Levobupivacaine 0.5-1ml/kg  
+ Ketamine 0.5mg/kg (10mg/ml) preservative free  
SPINAL: Heavy Bupivacaine 0.5% 0.13ml/kg

### CARDIAC

Dopamine : (3mg/kg in 50mls)  
Dobutamine : 1ml/hr = 1mcg/kg/min  
(dose 5-20mcg/kg/min)  
Adrenaline : (0.3mg/kg in 50mls)  
Noradrenaline : 1ml/hr = 0.1mcg/kg/min  
(dose 0.01-2mcg/kg/min)  
VF (shock resistant) Amiodarone 5mg/kg rapid IVbolus  
{use 5% glucose then 5-15mcg/kg/min  
if dilution reqd}  
SVT Adenosine 50 - 300 mcg/kg [max 3mg]

## Resuscitation Fluids

### Acceptable Fluids (*also known as*):

- 0.9% Sodium Chloride
- Hartmann's Solution (*Ringer-Lactate Solution, Compound Sodium Lactate*)
- 4.5% Albumin Solution (*PPS*)
- Gelofusine

### Dose:

**20ml/kg Bolus**

Can be given in divided doses if appropriate

## Fluids in Hypoglycaemia

### **Acceptable Fluids:**

- 10% Glucose

### **Dose:**

**3-5ml/kg Bolus**

## Maintenance Fluids

IV maintenance fluids are worked out on an hourly basis as follows:

- For the first 10kg - 4mls/kg/hr
- For the second 10kg - 2mls/kg/hr
- For additional kg above 20kg - 1ml/kg/hr

Worked example:

Maintenance fluids for a 35kg child would be 75ml/hr:

0 – 10kg	=	10 x 4	=	40mls
11 – 20kg	=	10 x 2	=	20mls
>20kg	=	15 x 1	=	15mls
		<b>TOTAL</b>	<b>=</b>	<b>75mls</b>

NB: For infants and children <10kg give 4mls/kg/hr (ie 96mls/kg/day)

Acceptable fluids:

- 0.45% Sodium Chloride / 5% Glucose pre-mixed bag

**Monitor blood glucose continually. Infants may require additional glucose, which may be added to the bag (refer to *Non-Standard Glucose Solutions sheet*).**

## NON-STANDARD GLUCOSE INFUSIONS (Edinburgh retrievals only)

### Burette:

- Glucose 10%
  - **80ml Glucose 5% + 10ml Glucose 50%**
  - **Final volume = 90ml**
- Glucose 15%
  - **70ml Glucose 5% + 20ml Glucose 50%**
  - **Final volume = 90ml**

### Bags:

- **Sodium chloride 0.45% / Glucose 10%**
  - Withdraw 55ml from 500ml bag of 0.45% Sodium Chloride / 5% Glucose
  - Add **55ml Glucose 50%**
  - **Mix well**
- **Sodium chloride 0.45% / Glucose 15%**
  - **Withdraw 110ml** from a bag of 0.45% Sodium Chloride / 5% Glucose
  - Replace with **110ml Glucose 50%**
  - **Mix well**

## NON-STANDARD GLUCOSE INFUSIONS (Glasgow retrievals only)

### Burette:

- Glucose 10%
  - **80ml Glucose 5% + 10ml Glucose 50%**
  - **Final volume = 90ml**
- Glucose 15%
  - **70ml Glucose 5% + 20ml Glucose 50%**
  - **Final volume = 90ml**

### Bags:

- **Sodium chloride 0.45% / Glucose 10%**
  - Take a bag of 500ml **Glucose 10%**
  - Add **7.5ml Sodium Chloride 30%**
  - Total in bag = 37.5mmol Sodium  
= 0.45% Sodium Chloride / 10% Glucose
  - **Mix well**
- **Sodium chloride 0.45% / Glucose 15%**
  - **Withdraw 110ml** from a bag of 0.45%  
Sodium Chloride / 5% Glucose
  - Replace with **110ml Glucose 50%**
  - **Mix well**

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Adenosine

**Application:** Termination of Paroxysmal SVT

**Contra- indications:** Second or third-degree AV block, sick sinus syndrome

**Precautions:** AF (atrial fibrillation) involving accessory pathways

**Drug Interactions:** Nil relevant

**Dose:**

Age	Initial Dose	Increasing by	Maximum Dose
All Ages	50 microgram/kg	50 microgram/kg every 2mins	300 microgram/kg <b>(Max 3mg)</b>

**Reconstitution:** Use neat in children >10kg  
Children <10kg – dilute to 1mg/ml in 0.9% Sodium Chloride

**Flushes compatible:** 0.9% Sodium Chloride

**Administration:** Rapid bolus. Flush immediately.

**Stability:** Use dilute solution immediately

**Physical Compatibility with other Drugs: Do not mix with other drugs**

**Side Effects:** Bronchospasm in asthmatic patients  
Painful if given peripherally

**Comments:** Half-life less than 2 seconds.  
Immediate effect is total heart block.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Adrenaline (Epinephrine)
<b>Application:</b>	Inotrope
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Pre-existing arrhythmias, diabetes, central administration preferred.
<b>Drug Interactions:</b>	Inhalational anaesthetics – risk of arrhythmia; beta-blockers – hypertension
<b>Dose:</b>	0.01 – 2 microgram/kg/min
<b>Reconstitution:</b>	0.3mg/kg in 50ml diluent
<b>Stability in IV Solutions:</b>	

Sodium Chloride 0.9%	Glucose 5%
<b>YES</b>	<b>YES</b>

<b>Administration:</b>	1ml/hr = 0.1microgram/kg/min Contact PICU if requiring inotropes
<b>Stability:</b>	Infusion stable for 24 hours
<b>Physical Compatibility with other Drugs: See comments</b>	
<b>Side Effects:</b>	Tremor, tachycardia, arrhythmia, cold extremities, headache, dizziness, nausea and vomiting
<b>Comments:</b>	<b>Inotropes should be administered through the same lumen of the same central line.</b> Should be administered centrally, but may be given peripherally if necessary Do not bolus drugs through the inotrope line. Monitor blood glucose.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Dobutamine
<b>Application:</b>	Inotrope
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Hypotension – causes vasodilatation which could lead to severe hypotension in a hypovolaemic patient
<b>Drug Interactions:</b>	Nil relevant
<b>Dose:</b>	5 – 20 microgram/kg/min
<b>Reconstitution:</b>	3mg/kg in 50ml diluent
<b>Stability in IV Solutions:</b>	

Sodium Chloride 0.9%	Glucose 5%
<b>YES</b>	<b>YES</b>

<b>Administration:</b>	1ml/hr = 1microgram/kg/min. Contact PICU if requiring inotropes
<b>Stability:</b>	Infusion stable for 24hrs

### **Physical Compatibility with other Drugs: See comments**

<b>Side Effects:</b>	Tachycardia, hypertension, phlebitis, rarely thrombocytopenia
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<b>Comments:</b>	<b>Inotropes should be administered through the same lumen of the same central line</b> Should be administered centrally, but may be given peripherally if necessary. Do not bolus drugs through the inotrope line.
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## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Dopamine
<b>Application:</b>	Inotrope
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Central administration preferred
<b>Drug Interactions:</b>	Nil relevant
<b>Dose:</b>	5 – 20 microgram/kg/min
<b>Reconstitution:</b>	3mg/kg in 50ml diluent

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%
<b>YES</b>	<b>YES</b>

**Administration:** 1ml/hr = 1microgram/kg/min.  
Contact PICU if requiring inotropes

**Stability:** Infusion stable for 24hrs

**Physical Compatibility with other Drugs: See comments**

**Side Effects:** Tachycardia, peripheral vasoconstriction (cold peripheries), hypertension

**Comments:** **Inotropes should be administered through the same lumen of the same central line.**  
Should be administered centrally, but may be given peripherally if necessary  
Do not bolus drugs through the inotrope line.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Fentanyl
<b>Application:</b>	Analgesic
<b>Contra-indications:</b>	Nil relevant
<b>Precautions:</b>	Renal impairment, hepatic impairment
<b>Drug Interactions:</b>	Nil relevant
<b>Dose:</b>	Infusion 2-5microgram/kg/hr Bolus 1-2microgram/kg as required
<b>Reconstitution:</b>	Neat solution of 50 microgram/ml (use 10ml ampoules)
<b>Stability:</b>	Infusion stable for 24hours

**Physical Compatibility with Other Drugs:** See comments

**Side Effects:** Respiratory depression, nausea/vomiting, hypotension, bradycardia, constipation. Large doses may cause chest wall rigidity if given without muscle relaxants.

**Comments:** Opioids and benzodiazepines can be run together on the same lumen or line. Non-ventilated patients should be appropriately monitored with respiratory support available. Naloxone is the recognised antagonist of opioids. Fentanyl will obtund the hypertensive response to intubation and therefore attenuate the associated rise in intracranial pressure.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Lorazepam (Ativan ®)

**Application:** Anti-convulsant

**Contra- indications:** Nil relevant

**Precautions:** Store in refrigerator

**Drug Interactions:** Other benzodiazepines and sedative agents  
(reduced respiratory drive)

**Dose:**

Age	ALL AGES
Dose	100microgram/kg Max 4mg/dose

**Reconstitution:** Further dilution required

**Flushes compatible:** 0.9% Sodium Chloride

**Administration:** Slow bolus over 3-5 minutes diluted to 1mg/ml with Water for injections or Sodium Chloride 0.9%

**Stability:** Use solution immediately

**Physical Compatibility with other Drugs:** Do not mix with other drugs

**Side Effects:** Respiratory Depression, delirium, drowsiness, hypotension

**Comments:** IV solution can be given rectally or sublingually (same dose)

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

- Approved Name:** Magnesium Sulphate (use in asthma)
- Application:** Adjunct to bronchodilators in severe status asthmaticus
- Contra- indications:** Nil relevant
- Precautions:** Nil relevant
- Drug Interactions:** Nil relevant
- Dose:** 50mg/kg (=0.1ml/kg of 50% Magnesium Sulphate),  
Max 2g
- Reconstitution:** Further dilution is required

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%
YES	YES

- Flushes compatible:** As above
- Administration:** Dilute dose 5 times before administration  
(eg dose = 1ml, dilute to 5ml).  
Administer over 20 minutes
- Stability:** Use dilute solution immediately.

**Physical Compatibility with other Drugs: Do not mix with other drugs**

- Side Effects:** High magnesium levels can cause dystonia,  
nausea, vomiting, flushing
- Comments:** 1g magnesium sulphate = 4mmol magnesium

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Midazolam

**Application:** Sedative

**Contra- indications:** Myaesthesia gravis (unless already ventilated)

**Precautions:** Nil relevant

**Drug Interactions:** Nil relevant

**Dose:**

Age	Dose	Bolus
All ages	100 – 200 microgram/kg/hr	100 – 200 microgram/kg

**Reconstitution:** 50mg to 50ml diluent

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%	Water
YES	YES	YES

**Administration:** 0.1ml/kg/hr =100microgram/kg/hr

**Stability:** Infusion stable for 24hrs

**Physical Compatibility with other Drugs: See Comments**

**Side Effects:** Gastro-intestinal disturbance, hypotension, bradycardia, bronchospasm, respiratory depression

**Comments:** Opioids and benzodiazepines can be run together on the same lumen or line.  
Non-ventilated patients should be appropriately monitored with respiratory support available.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Morphine
<b>Application:</b>	Analgesic / moderate sedative action
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Renal impairment, hepatic impairment,
<b>Drug Interactions:</b>	Nil relevant
<b>Dose:</b>	

Loading Dose	Maintenance Dose	Bolus as required
50-100 microgram/kg	10-80 microgram/kg/hr	20-40 microgram/kg

**Reconstitution:** 1mg/kg Morphine in 50ml diluent  
Max 50mg in 50ml

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%
YES	YES

**Administration:** 1ml/hr = 20microgram/kg/hr (if patient <50kg)

**Stability:** Infusion stable for 24hrs

**Physical Compatibility with other Drugs: See comments**

**Side Effects:** Respiratory depression, nausea/vomiting, constipation, drowsiness, urticaria/pruritis

**Comments:** Opioids and benzodiazepines can be run together on the same lumen or line. Non-ventilated patients should be appropriately monitored with respiratory support available. Naloxone is the recognised antagonist of Morphine.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Noradrenaline (Norepinephrine)
<b>Application:</b>	Inotrope
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Central administration preferred.
<b>Drug Interactions:</b>	Inhalational anaesthetics - risk of arrhythmia; beta-blockers - hypertension
<b>Dose:</b>	0.01 – 2 microgram/kg/min
<b>Reconstitution:</b>	0.3mg/kg in 50ml diluent
<b>Stability in IV Solutions:</b>	

Sodium Chloride 0.9%	Glucose 5%
<b>YES</b>	<b>YES</b>

**Administration:** 1ml/hr = 0.1microgram/kg/min

**Stability:** Infusion stable for 24hours

**Physical Compatibility with other Drugs: See comments**

**Side Effects:** Hypertension, bradycardia, peripheral ischaemia

**Comments:** **Inotropes should be administered through the same lumen of the same central line.**  
Should be administered centrally, but may be given peripherally if necessary.  
Do not bolus drugs through the inotrope line.  
Extravasation will cause local necrosis. If extravasated refer to local extravasation policy.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

- Approved Name:** Phenobarbital (Phenobarbitone)
- Application:** Anti-convulsant (status epilepticus)
- Contra- indications:** Porphyria
- Precautions:** Hepatic impairment
- Drug Interactions:** Extensive – refer to British National Formulary

**Dose:**

Loading Dose	Maintenance Dose
20mg/kg	5mg/kg twice daily

- Reconstitution:** Dilute dose to 10 times volume with Water for injection

**Stability in IV Solutions:**

Water
<b>YES</b>

- Flushes compatible:** Sodium Chloride 0.9% pre and post dose
- Administration:** Administer as slow infusion over 20minutes. Rate should not exceed 1mg/kg/min
- Stability:** Use solution immediately

**Physical Compatibility with other Drugs: Do not mix with other drugs**

- Side Effects:** Drowsiness, hyperkinesia, irritant to skin – caution when making up infusions.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Phenytoin

**Application:** Anti-convulsant (status epilepticus)

**Contra- indications:** Sinus bradycardia, sino-atrial block, second & third-degree heart block, porphyria

**Precautions:** Hypotension, heart failure

**Drug Interactions:** Extensive. Refer to British National Formulary

**Dose:**

Age	Loading Dose	Maintenance Dose
Neonate	20mg/kg	2-4 mg/kg twice daily
1 month – 18 yrs	18mg/kg	2.5-7.5mg/kg twice daily

**Reconstitution:** *Epanutin® Ready Mixed* does not require dilution  
Other brands – dilute 50mg/ml to 10mg/ml with 0.9% Sodium Chloride.

**Stability in IV Solutions:**

Sodium Chloride 0.9%
<b>YES</b>

**Flushes compatible:** 0.9% Sodium Chloride

**Administration:** Administer as slow infusion over 20minutes. Rate should not exceed 1mg/kg/min. Use an in-line filter where available.

**Stability:** Use reconstituted diluted infusion within one hour. Ready-mixed solution should only be drawn up at the moment of injection.

**Physical Compatibility with other Drugs: Do not mix with other drugs**

**Side Effects:** Arrhythmia, skin irritation if extravasated.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Dinoprostone (Prostaglandin E2);  
also known as "Prostin"

**Application:** Maintenance of PDA prior to surgical intervention

**Contra- indications:** Nil relevant

**Precautions:** Nil relevant

**Drug Interactions:** NSAIDs (e.g. Ibuprofen) will antagonise the effect

**Dose:** 10 – 50 **nanogram**/kg/min

**Reconstitution:** 75 **microgram**/kg in 50ml diluent

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%
<b>YES</b>	<b>YES</b>

**Flushes compatible:** As above

**Administration:** Continuous IV Infusion  
0.4ml/hr = 10 **nanogram**/kg/min. Titrate to effect  
as instructed by PICU consultant

**Stability:** Infusion stable for 24hrs

**Physical Compatibility with other Drugs: Do not mix with other drugs**

**Side Effects:** Nausea, vomiting, diarrhoea, bronchospasm,  
pyrexia, respiratory depression,  
apnoea – consider intubation

**Comments:** Dinoprostone should be infused through a  
dedicated lumen or line.  
**Drugs with similar names are available. Check all  
drugs carefully before starting infusion.**  
In some cases it may be appropriate to commence  
infusion at 100 nanograms/kg/min (4ml/hr) until  
duct open and then quickly wean to maintenance  
dose. PICU will advise when this is necessary.  
Caution with history/increased risk of NEC  
Prostaglandin E2 has been implicated.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Salbutamol
<b>Application:</b>	Bronchodilator
<b>Contra- indications:</b>	Nil relevant
<b>Precautions:</b>	Tachycardia, hypokalaemia, QT interval prolongation, hyperglycaemia, hyperthyroidism.
<b>Drug Interactions:</b>	Corticosteroids: increased risk of hypokalaemia Theophylline/Aminophylline: increased risk of hypokalaemia

<b>Dose:</b>	<b>Loading Dose</b>	<b>15microgram/kg over 15 mins</b>
	<b>Maintenance Dose</b>	<b>2-5microgram/kg/min</b>

**Maximum rate 10microgram/kg/min in consultation with PICU**

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%	Water for Injections	Sodium Chloride 0.45%/ Glucose 5%
YES	YES	YES	YES

**Reconstitution:** Remove 100ml from a 500ml bag  
Use 5mg/5ml solution  
Replace with 20x5ml ampoules =100mg Salbutamol  
Concentration = 200microgram/ml

**Administration:** 0.3ml/kg/hr= 1microgram/kg/min

**Stability:** Stable for 24hours

**Physical Compatibility with other Drugs: Incompatible with Aminophylline**

**Side Effects:** Tachycardia, tremor, hypokalaemia

**Comments:** Venous irritant, central access preferable  
Monitor blood glucose and serum potassium  
Monitor ECG  
**This requires 20 ampoules of Salbutamol**

Scottish Paediatric Retrieval Service  
Intravenous Medicine Information

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

**Approved Name:** Vasopressin/Arginine Vasopressin

**Application:** Pressor/Inotrope

**Contra- indications:** Hepatic Failure

**Precautions:** Cardiac Failure, hypertension

**Drug Interactions:** Nil relevant

**Dose:** 0.0003 – 0.002 units/kg/min

**Reconstitution:** 1 unit/kg in 50ml diluent

**Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%
YES	YES

**Administration:** 1ml/hr = 0.0003 units/kg/min  
6ml/hr = 0.002 units/kg/min (**max dose**)

**Stability:** Stable for 12hrs

**Physical Compatibility with other Drugs: Do not mix with other drugs**

**Side Effects:** Vasoconstriction - may cause peripheral and myocardial ischaemia, hypertension, fluid retention, nausea/vomiting, hypersensitivity reactions.

**Comments:** **Inotropes should be administered through the same lumen of the same central line.**  
Do not bolus drugs through the inotrope line.  
Extravasation will cause local necrosis. If extravasated refer to local extravasation policy.

## Scottish Paediatric Retrieval Service Intravenous Medicine Information

<b>Approved Name:</b>	Vecuronium
<b>Application:</b>	Muscle relaxant (non-depolarising)
<b>Contra-indications:</b>	Nil relevant
<b>Precautions:</b>	Nil relevant
<b>Drug Interactions:</b>	Nil relevant
<b>Dose:</b>	Infusion 100-200 microgram/kg/hr Bolus 100-200 microgram/kg
<b>Reconstitution:</b>	Dissolve 10mg powder in 10ml of water

### **Stability in IV Solutions:**

Sodium Chloride 0.9%	Glucose 5%	Water
YES	YES	YES

**Administration:** 0.1 ml/kg/hr = 100 microgram/kg/hr

**Stability:** Infusion stable for 24hours

**Physical Compatibility with Other Drugs:** See comments

**Side Effects:** Nil relevant

**Comments:** Opioids, benzodiazepines and vecuronium can be run together on the same lumen or line. Patients will require ventilation.