Peripheral Noradrenaline Guideline

Critical Care

Royal Alexandra Hospital

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Guideline details

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Objectives	Describe the use of peripheral noradrenaline in the Royal Alexandra Hospital. This will primarily focus on the high dependency and intensive care units. This resource can also be utilised in the resuscitation area of the emergency department and can help guide use of this therapy in theatres and the recovery suite.
Scope	To describe the routine use of peripheral noradrenaline. This guideline has used available evidence, the product / manufacturers literature, alongside an evaluation of standard practice within the RAH ICU and HDU. This has become of particular importance after some patients have been commenced on peripheral noradrenaline without an accompanying guideline and outwith a formal trial.
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Important abbreviations

For a full list of abbreviations please click here
The most significant abbreviations to highlight here are:

IBW	**Ideal Body Weight**
kg	**Kilogram**
MAP	**Mean Arterial Pressure**
µg	**Microgram**
µg/ml	**Micrograms per millilitre, this usually refers to a drug concentration**
µg/kg/min	**Micrograms per kilogram per minute.** **This refers to the rate of an infusion and is used to describe the rate (or dose) of noradrenaline that a patient is receiving**

Quick start guide: peripheral noradrenaline

If unfamiliar with peripheral noradrenaline please read the full guideline. The advice in this guideline only applies to peripheral dosing of noradrenaline and **does not apply to central administration which is five times more concentrated.**

Central line (CVC) administration remains the preferred route for the administration of noradrenaline. If unfamiliar with the indications for peripheral dosing please consult the relevant sections below. Peripheral infusions should not continue beyond 24 hours.

Concentration	4mg of noradrenaline in 250ml **OR** 8mg of noradrenaline in 500ml Final concentration: 16 micrograms per millilitre (16 µg/ml)
Diluent	5% Glucose (first line); 0.9% NaCl can be used if 5% Glucose is not available
Safety	• Insert two cannulas: minimum cannula size of 20G. • Placement should be proximal to wrist i.e. further up the arm, away from the hand. • Cannula should bleed back freely, should definitely be venous (**NOT ARTERIAL**), and flush easily with 5 to 10ml of 0.9% NaCl. • Monitor cannula site regularly (minimum every hour) for signs of extravasation. Stop the infusion and go to the section here if any pain, redness, swelling, or other signs of extravasation appear. • The patient should be discussed with the responsible consultant immediately if they are on or approaching the maximum rate or dose.
Monitoring	The patient should have continuous BP monitoring with an arterial line.
Dose weight	Calculate ideal body weight (IBW) here. This only applies to patients ≥150cm. For patients under 150cm (~ 5 feet) consult the full guideline section here.
Starting dose	Start infusion at 0.05 µg/kg/min (micrograms/kg/min) from the dosing table here. If IBW unknown start infusion at 13ml/hr (dose for a 70kg patient) until IBW can be calculated.
Titration	Increase the rate every 5 to 15 minutes depending on urgency. Increase the infusion by the following doses or rates until the target MAP is reached: 5 to 10 ml/hr increments **OR** 0.05µg/kg/min increments (using the dosing table)
Maximum dose	The maximum dose for peripheral noradrenaline is: **0.2µg/kg/min** (can also be written as: 0.2micrograms/kg/min)
Maximum infusion rate	Calculate the maximum rate using the formula: **Maximum rate (ml/hr) = IBW (kg) x 0.75**

Quick start dosing table: Peripheral noradrenaline

To calculate ideal body weight (IBW) click here. If the patient is under 150cm tall click here.

The following infusion table is for peripheral strength noradrenaline which is always 16µg/ml (16 micrograms/ml) and **does not apply to the more concentrated central (CVC) infusions.**

The infusions are made in 5% Glucose (first line) or 0.9% Sodium Chloride when 5% Glucose is not available. The two dilution options are:

- 250ml bag: Remove 4ml from a 250ml bag and then add 4mg of Noradrenaline

OR

- 500ml bag: Remove 8ml from a 500ml bag and then add 8mg of Noradrenaline

	Starting dose (0.05µg/kg/min)	Maximum dose (0.2µg/kg/min)
Ideal body weight (kg)	Infusion rate (ml/hr)	Infusion rate (ml/hr)
35	6.6	26.3
40	7.5	30.0
45	8.4	33.8
50	9.4	37.5
55	10.3	41.3
60	11.3	45.0
65	12.2	48.8
70	13.1	52.5
75	14.1	56.3
80	15.0	60.0
85	15.9	63.8
90	16.9	67.5
95	17.8	71.3
100	18.8	75.0
105	19.7	78.8
110	20.6	82.5
115	21.6	86.3

Please note
µg/kg/min = micrograms / kg / min

Other resources: Hyperlinks

- GG&C Adult Therapeutics Handbook
- Intensive Care Society: Peripheral Noradrenaline Guideline
- Electronic medicines compendium (emc)
- British National Formulary (BNF)
- Intensive Care Society Guidelines
- The obese patient, anaesthesia, and drug dosing (SOBA-UK)
- Drug dosing in obese adults - PMC (nih.gov)
- Drug dosing in the critically ill obese patient
- Bodyweight calculators: Ideal and adjusted (MDCalc)
- Vascular access devices (VADs), care and maintenance (592) (nhsggc.org.uk)

Full guideline: peripheral noradrenaline

Location

Peripheral noradrenaline should only be commenced in one of the following locations:

- Emergency Department (ED)
- Theatre suite: theatre or recovery areas
- High Dependency Unit (HDU)
- Intensive Care Unit (ICU)

Indications

Peripheral noradrenaline is used for the treatment of hypotension, specifically when vasodilatation or redistributive shock is thought to be the underlying cause. Septic shock will be the most common reason to commence peripheral noradrenaline. The patient should also meet one of the following three criteria:

1. It is anticipated that the shock will resolve quickly (expected resolution < 24 hours).
2. As a bridging therapy until central access can be established.
3. For patients with a clearly documented ceiling of treatment (treatment escalation plan) that states that insertion of a central venous catheter (CVC) and commencement of central administration of vasopressors is deemed inappropriate. This would be a consultant only decision.

Every patient who is being commenced on peripheral noradrenaline should be discussed with a consultant familiar with noradrenaline before, or at the time of, starting the infusion. Best practice is to discuss this with the HDU or ICU consultant but can involve any consultant familiar with noradrenaline. Some examples of other specialties who are (or may be) familiar with noradrenaline include: Anaesthesia; Acute or General Medicine; General Surgery; Emergency Medicine.

On the whole, central line (CVC) administration continues to be the preferred mode of administration for noradrenaline. If this mode of delivery is available (or central line placement is appropriate), the patient should be commenced on central noradrenaline and please follow standard practice and the usual guidance.

Contraindications

- Patients with a clear ceiling of treatment (treatment escalation plan) that states that vasopressors, high dependency, or intensive care treatment would be inappropriate should not receive peripheral noradrenaline.
- Peripheral noradrenaline should not be used for patients with acute heart failure or cardiogenic shock.
- If peripheral intravenous (IV) access is difficult or unreliable, peripheral noradrenaline should not be started through this line.

Form

Noradrenaline is presented as a 1mg/ml solution in a 4ml ampoule.

Total dose per ampoule is 4mg.

Preparation

To prepare a **250ml bag** of noradrenaline for peripheral administration, remove 4ml from a 250ml bag of 5% Glucose and then add one ampoule of noradrenaline (4mg) to the bag. Label as per standard practice. If 5% Glucose is not available the infusion can be made using 0.9% Sodium Chloride (NaCl).

To prepare a **500ml bag** of noradrenaline for peripheral administration, remove 8ml from a 500ml bag of 5% Glucose and then add two ampoules of noradrenaline (8mg) to the bag. Label as per standard practice. If 5% Glucose is not available the infusion can be made using 0.9% Sodium Chloride (NaCl).

Administration

Peripheral venous access should ideally be of size 20G or more; it should be sited proximal to the wrist (further up) in the arm. A second peripheral venous cannula should be sited as a contingency in case of a primary site failure. This second cannula can also be used to change to a new pump if required at any point e.g. when transferred into HDU/ICU on a theatre or emergency department pump.

There should be a return of blood following insertion and it should flush easily with 5 to 10ml of 0.9% Sodium Chloride.

When noradrenaline is connected to the cannula **no other drugs or infusions should be given into this cannula.** Best practice is to connect a **single lumen** Needle Free Access Device (NFAD, also known as an 'octopus') to the cannula and then connect the infusion to this. If a **single lumen** NFAD is not available the giving set should be connected directly onto the cannula. **Under no circumstances** should a multi-lumen NFAD be used for peripheral noradrenaline.

This guidance is a slight variation from the wider GG&C vascular access guidance (found here) and only applies to peripheral noradrenaline.

It is best to make sure the air trap chamber of the giving set is filled to the line (half way up the chamber) to minimise problems and maximise safety when changing bags.

Discontinuation of infusion

After discontinuation, flush the peripheral cannula / PVC (and NFAD / 'octopus', if connected) with 0.9% Sodium Chloride at 5ml/hr for one hour. Only once this flush is complete can the PVC be used for other drugs or infusions. It must not be used for anything else until it has been flushed.

Changing the infusion bag

Infusion bags can be changed without stopping the infusion. Note the maximum duration of peripheral noradrenaline is 24 hours which is less than the standard maximum duration of use of a single giving set (72 hours). This means that once the patient is established on the critical care infusion pump the same giving set can be used for the duration of therapy.

It is best practice to have the air trap of the giving set filled to the line on the chamber. This increases the safety when changing a bag. It is also important to make sure the air trap is not inverted to avoid air entrainment.

With the air chamber filled to the line there will be over four minutes' worth of fluid (5ml) in the chamber, even if the infusion is running at the maximum rate. The new bag should be ready to swap over and hanging on the drip stand. The new bag can be either 250ml or 500ml and does not need to match the previous bag for volume (as long as it is prepared to the same concentration as outlined earlier). The infusion spike can then be removed from the empty bag and pushed into the new bag without interrupting the infusion. The 'volume to be infused' volume on the pump will have to be changed to reflect the volume in the new bag. This can be done without stopping the infusion for both ICU and HDU pumps. Other pumps (e.g. from the emergency department) often do not have this facility and this is why the patient should be changed to an ICU/HDU pump after transfer.

'Double pumping' infusions should not be required. If those changing the bags are unfamiliar with any technique then this should be discussed with the nurse in charge and the medical team at the earliest opportunity (don't wait until the bag is almost empty).

If the patient is transferred into a critical care area with peripheral noradrenaline running it is best practice to attach a new infusion to the second cannula, start the new infusion and then stop the original infusion once the infusion has been established. The cannula that no longer has noradrenaline running should now be flushed with 0.9% Sodium Chloride (NaCl) at 5ml/hr for one hour. The original pump can be returned to the area that it came from.

Monitoring

The cannula site and blood pressure need regular monitoring.

- Cannula: Monitor cannula site hourly and record on the drug infusion chart (example here). If there are any signs of extravasation or other problems with the cannula please see the extravasation section here.
- An arterial line is recommended and should be inserted before commencement of peripheral noradrenaline or very soon afterwards. Only in exceptional circumstances should an infusion continue without an arterial line and this would need to be discussed with the responsible consultant.

Ideal body weight calculation

For patients ≥ 150cm follow the link here to calculate ideal body weight (IBW). If using Careview / ICCA (critical care electronic notes system), this will calculate an IBW once the patient's height has been entered onto the system. A GP "SCI" referral letter on clinical portal is a good place to find a recorded patient height.

To manually calculate IBW, use the formula:

$$IBW\ (male\ sex) = 50 + 0.906(height - 150)$$

$$IBW\ (female\ sex) = 45.5 + 0.906(height - 150)$$

Where:

- IBW is in kilograms (kg)
- Height is in centimetres (cm)

If the patient is 150cm (approximately 5 feet) or under, the weight used should be whatever is lowest from the following:

- Females: 46kg or the actual (measured) weight.
- Males: 50kg or the actual (measured) weight.

Dose range

The most precise description of an infusion rate or dose is to describe this as micrograms per kg per minute (µg/kg/min) rather than in millilitres per hour (ml/hr). This allows better understanding when changing from one infusion concentration to another and taking into account the patient mass and size.

For peripheral noradrenaline the dose range should be:

Zero to 0.2 micrograms per kg per minute (0 to 0.2 µg/kg/min) ideal body weight (IBW).

Maximum infusion rate in ml/hr

The maximum dose is 0.2µg/kg/min (0.2 micrograms/kg/min). The dosing table here highlights the corresponding maximum infusion rate for each 5kg weight range.

The exact maximum rate can be calculated using the following formula:

$$Maximum\ infusion\ rate\ (ml/hr) = Weight\ x\ 0.75$$

Where:

- The maximum infusion rate (ml/hr) applies to peripheral noradrenaline only (note the peripheral noradrenaline infusion concentration is 16 µg/ml).
- Weight is ideal body weight in kilograms (kg), click here to calculate.
- 0.75 simplifies the full equation found here and applies to the maximum peripheral noradrenaline dose of 0.2µg/kg/min only.

Record the maximum rate on the infusion chart.

The patient should be discussed with the responsible consultant immediately if they are on or approaching the maximum rate or dose. If there are problems or delays contacting the consultant, the ICU trainee should be contacted.

Dose titration

The infusion can be titrated in ml/hr or in µg/kg/min using the dosing table (here). For every patient on peripheral noradrenaline the maximum infusion rate (in ml/hr) should be calculated and recorded on the infusion chart. The maximum dose is 0.2µg/kg/min. For a 70kg patient this would be 52.5 ml/hr.

If the infusion needs to be commenced before a height and IBW are known the infusion can be commenced at 13ml/hr until this is calculated.

Please note that peripheral noradrenaline is one-fifth of the strength of central (single strength) noradrenaline. For this reason and the slower circulation time for peripheral administration those familiar with titrating central noradrenaline will notice that changes to infusion rates will take slightly longer to cause a change in the patient's clinical condition and blood pressure.

The targets for dose titration should be guided by the clinical team and titrated to achieve the target Mean Arterial Pressure (MAP) up to the maximum infusion rate.

Those unfamiliar with titration of vasopressors should be closely supervised by an experienced critical care, HDU, or ICU nurse and / or doctor.

Titrating the infusion in ml/hr

Consult the quick-start dosing table to find the starting dose in ml/hr. If IBW is unknown a starting dose of 13ml/hour equates to approximately 0.05 micrograms per kg per minute (µg/kg/min) for a 70kg person and would be a pragmatic starting point for most patients. The rate can be increased by 5 to 10ml/hr depending on urgency of the clinical situation, degree of hypotension, and underlying condition causing shock. Typically changing the infusion rate every 5 to 15 minutes is reasonable.

These starting doses and titration guidelines are a very rough guide and apply to peripheral strength (16µg/ml) noradrenaline only.

This method of titration should be familiar to nursing and medical staff already experienced with the administration and titration of (central) noradrenaline.

Once the MAP remains at or above the target set by the clinical team the infusion can be weaned in a stepwise fashion. Rates can be reduced in 5 to 10 ml/hr increments. Adjusting the dose every 5 to 15 minutes is a reasonable starting place.

Please note the maximum infusion rate of 0.2µg/kg/min should not be exceeded.

Titrating the infusion in µg/kg/min

Start the infusion at 0.05µg/kg/min IBW by consulting the infusion table here or calculating the starting infusion rate using the formula here. Generally increasing the dose every 5 to 15 minutes is reasonable but should be guided by the clinical situation. Increase the rate by 0.05µg/kg/min until the target MAP is achieved, up to a maximum rate of 0.2µg/kg/min.

Once the MAP remains at or above the target set by the clinical team the infusion can be weaned in a stepwise fashion. Rates can be reduced in 0.02 to 0.05µg/kg/min increments. Once again, adjusting the dose every 5 to 15 minutes is a reasonable starting place.

Infusion duration

Peripheral noradrenaline should not be continued beyond 24 hours. At this point the infusion should be stopped and/or the patient transitioned onto central (CVC) dosing noradrenaline.

After discontinuation, flush the peripheral cannula with 0.9% Sodium Chloride at 5ml/hr for one hour (see section here) to avoid adverse haemodynamic effects.

Calculating the dose: when titrating in ml/hr

When the rate, in ml/hr, is already known the formula is:

$$Dose\ (\mu g/kg/\min) = \frac{Infusion\ rate\ x\ 16}{Weight\ x\ 60}$$

Where:

- Infusion rate is in millilitres per hour (ml/hr).
- Weight is ideal body weight in kilograms (kg).
- "16" corresponds to the infusion concentration, for peripheral strength this is 16µg/ml.
- "60" corresponds to 60 minutes to convert µg/kg/hr to µg/kg/min.

Calculating an infusion rate: when titrating in µg/kg/min

When the dose, in µg/kg/min, is known the formula is:

$$Infusion\ rate\ (ml/hr) = \frac{Dose\ x\ Weight\ x\ 60}{16}$$

Where:

- Dose is the target dose in µg/kg/min (usual starting dose is 0.05, the maximum dose is 0.2 µg/kg/min).
- Weight is ideal body weight in kilograms (kg).
- "60" corresponds to 60 minutes to calculate the total dose to be delivered in one hour.
- "16" corresponds to the infusion concentration, for peripheral strength this is 16µg/ml.

For the infusion dosing table click on the link here.

Extravasation of peripheral noradrenaline

Extravasation describes the leakage of any drug into surrounding tissues and is a rare complication of peripheral vasopressor infusion.

Regular monitoring of the infusion site is essential to enable early recognition and management of extravasation events and should be recorded on the observation chart every hour while the infusion is running.

Extravasation should be suspected if there is any of the following:

- Patient reports pain or itching at infusion site.
- Pallor, oedema / swelling, or erythema of skin at intravenous cannula site.

If extravasation is suspected the following actions are recommended:

1. Stop the infusion immediately and disconnect the line from the peripheral venous cannula (PVC). Connect the line to the second PVC in order to continue the vasopressor infusion.
2. Attempt to aspirate 3 to 5ml from the PVC if able.
3. Remove the cannula and apply a dressing to the removal site.
4. Mark the extravasation area if possible, in order to allow monitoring of any developing injury.
5. Elevate the affected limb if able to do so to reduce swelling.
6. Consider application of a topical vasoactive agent to encourage local blood flow (e.g. Glyceryl trinitrate [GTN] patch).
7. Administer analgesia if required.
8. Seek advice from a surgeon or your local tissue viability service if concerned.

Dosing table: Peripheral Noradrenaline

Noradrenaline concentration: 16µg/ml (16 micrograms per millilitre).

Infusion rates are in ml/hr. Noradrenaline doses are described as micrograms per kilogram per minute (µg/kg/min).

Noradrenaline: Peripheral strength 4mg per 250ml OR 8mg per 500ml	Dose (µg/kg/min)	Ideal Body Weight (kg)																
		35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115
		Infusion rate in ml/hr																
	0.01	1.3	1.5	1.7	1.9	2.1	2.3	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	3.9	4.1	4.3
	0.02	2.6	3.0	3.4	3.8	4.1	4.5	4.9	5.3	5.6	6.0	6.4	6.8	7.1	7.5	7.9	8.3	8.6
	0.03	3.9	4.5	5.1	5.6	6.2	6.8	7.3	7.9	8.4	9.0	9.6	10.1	10.7	11.3	11.8	12.4	12.9
	0.04	5.3	6.0	6.8	7.5	8.3	9.0	9.8	10.5	11.3	12.0	12.8	13.5	14.3	15.0	15.8	16.5	17.3
	0.05	**6.6**	**7.5**	**8.4**	**9.4**	**10.3**	**11.3**	**12.2**	**13.1**	**14.1**	**15.0**	**15.9**	**16.9**	**17.8**	**18.8**	**19.7**	**20.6**	**21.6**
	0.06	7.9	9.0	10.1	11.3	12.4	13.5	14.6	15.8	16.9	18.0	19.1	20.3	21.4	22.5	23.6	24.8	25.9
	0.07	9.2	10.5	11.8	13.1	14.4	15.8	17.1	18.4	19.7	21.0	22.3	23.6	24.9	26.3	27.6	28.9	30.2
	0.08	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	30.0	31.5	33.0	34.5
	0.09	11.8	13.5	15.2	16.9	18.6	20.3	21.9	23.6	25.3	27.0	28.7	30.4	32.1	33.8	35.4	37.1	38.8
	0.1	13.1	15.0	16.9	18.8	20.6	22.5	24.4	26.3	28.1	30.0	31.9	33.8	35.6	37.5	39.4	41.3	43.1
	0.11	14.4	16.5	18.6	20.6	22.7	24.8	26.8	28.9	30.9	33.0	35.1	37.1	39.2	41.3	43.3	45.4	47.4
	0.12	15.8	18.0	20.3	22.5	24.8	27.0	29.3	31.5	33.8	36.0	38.3	40.5	42.8	45.0	47.3	49.5	51.8
	0.13	17.1	19.5	21.9	24.4	26.8	29.3	31.7	34.1	36.6	39.0	41.4	43.9	46.3	48.8	51.2	53.6	56.1
	0.14	18.4	21.0	23.6	26.3	28.9	31.5	34.1	36.8	39.4	42.0	44.6	47.3	49.9	52.5	55.1	57.8	60.4
	0.15	19.7	22.5	25.3	28.1	30.9	33.8	36.6	39.4	42.2	45.0	47.8	50.6	53.4	56.3	59.1	61.9	64.7
	0.16	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	45.0	48.0	51.0	54.0	57.0	60.0	63.0	66.0	69.0
	0.17	22.3	25.5	28.7	31.9	35.1	38.3	41.4	44.6	47.8	51.0	54.2	57.4	60.6	63.8	66.9	70.1	73.3
	0.18	23.6	27.0	30.4	33.8	37.1	40.5	43.9	47.3	50.6	54.0	57.4	60.8	64.1	67.5	70.9	74.3	77.6
	0.19	24.9	28.5	32.1	35.6	39.2	42.8	46.3	49.9	53.4	57.0	60.6	64.1	67.7	71.3	74.8	78.4	81.9
	0.2	**26.3**	**30.0**	**33.8**	**37.5**	**41.3**	**45.0**	**48.8**	**52.5**	**56.3**	**60.0**	**63.8**	**67.5**	**71.3**	**75.0**	**78.8**	**82.5**	**86.3**
		0.05µg/kg/min is the usual starting dose							**0.2µg/kg/min is the maximum dose**									

References and related guidelines

References / Evidence	
References	https://www.medicines.org.uk/emc https://bnf.nice.org.uk/
Evidence Method	Describe the methods and approach to the development of this guideline. SEE AGREE
Related Resources	1. GG&C Adult Therapeutics Handbook 2. Intensive Care Society: Peripheral Noradrenaline Guideline 3. Electronic medicines compendium (emc) 4. British National Formulary (BNF) 5. Intensive Care Society Guidelines 6. The obese patient, anaesthesia, and drug dosing (SOBA-UK) 7. Drug dosing in obese adults - PMC (nih.gov) 8. Drug dosing in the critically ill obese patient 9. Bodyweight calculators: Ideal and adjusted (MDCalc)
Related Guidelines	https://ggcmedicines.org.uk/ Vascular access devices (VADs), care and maintenance (592) (nhsggc.org.uk)

Abbreviations

ED	Emergency Department
≥	Equal to or greater than
≤	Equal to or less than
G	Gauge (refers to cannula size in this document)
GTN	Glyceryl trinitrate
>	Greater than
HDU	High Dependency Unit
hr	Hour
ICU	Intensive Care Unit
IV	Intravenous
kg	Kilogram(s)
<	Less than
MAP	Mean Arterial Pressure
µg	Microgram
mg	Milligram
ml	Millilitre
min	Minute
NFAD	Needle Free Access Device
PVC	Peripheral Venous Cannula
NaCl	Sodium Chloride

Appendix: Prescription chart

NHS Greater Glasgow and Clyde

RAH ADULT PRESCRIPTION AND ADMINISTRATION CHART: PERIPHERAL NORADRENALINE (16 micrograms/ml)

Patient name: .....

Date of birth: .....

CHI No: .....

Affix patient label

Patient's Ideal Body weight and height

Height (cm) .....

Ideal Body Weight [IBW] = (kg) .....

QR code for IBW

For guidance on completion of this chart, refer to the front page of the prescription pad. Ensure the medicine is also prescribed on the Kardex / HEPMA.

Guideline Link: https://clinicalguidelines.nhsggc.org.uk/critical-care/clyde-critical-care/

Target MAP _ _ _ _ _ _ mmHg

***** Maximum infusion rate (IBW x 0.75) = _ _ _ _ _ _ _ _ ml/hr *****

1 Prescription details

Medicine	Total amount of medicine in syringe/bag:	Diluent:	Total volume in syringe or bag	Drug concentration:	Route:	Prescriber's signature, PRINTED name and designation:
Noradrenaline	4mg	Glucose 5%	250ml	16 micrograms/ml	IV	

Nursing staff to complete

Syringe or infusion pump model and medical physics number:

2 Flow rate details (max dose 0.2 micrograms/kg/min, max infusion rate = IBW [kg] x 0.75)

	Date	Start time	Drug dose per hour	Required flow rate setting (ml/hr)	Additional instructions	Prescriber's signature, PRINTED name and designation	Calculation verified by
Initial rate							
Change 1							
Change 2							
Change 3							
Change 4							

3 Preparation and pump set up details

	Date	Time	Preparation and pump set up by	Volume in syringe/bag (Post-priming)	Checked by
Initial prep					
Repeat 1					
Repeat 2					
Repeat 3					
Repeat 4					

4 Administration details (complete HOURLY & check cannula / PVC for extravasation)

Date	Time	Volume remaining (ml)	Total volume infused (ml)	Rate setting (ml/hour)	Cannula reviewed? (please ✓)	Checked by	Comments	Date	Time	Volume remaining (ml)	Total volume infused (ml)	Rate setting (ml/hour)	Cannula reviewed? (please ✓)	Checked by	Comments

Approved by: NHSGGC Clyde Safer Use of Medicines Committee, May 2023 Review date: June 2026 Page 1

RAH ADULT PRESCRIPTION AND ADMINISTRATION CHART: PERIPHERAL NORADRENALINE (16 micrograms/ml)

Patient name: .....

Date of birth: .....

CHI No: .....

Affix patient label

NHS Greater Glasgow and Clyde

Name of medicine prescribed in section 1 (nurse to complete): _____

4 Administration details - continued (complete HOURLY & check cannula / PVC for extravasation)

Date	Time	Volume remaining (ml)	Total volume infused (ml)	Rate setting (ml/hour)	Cannula reviewed? (please ✓)	Checked by	Comments	Date	Time	Volume remaining (ml)	Total volume infused (ml)	Rate setting (ml/hour)	Cannula reviewed? (please ✓)	Checked by	Comments

5 DISCONTINUATION

Prescriber's signature, PRINTED name and designation: **Date:** **Time:**