 <b>Waikato District Health Board</b>		Type: <b>Drug Guideline</b>	Document reference: <b>2925</b>	Manual Classification: <b>Waikato DHB Drug Guidelines</b>
Title: <b>Heparin sodium for neonates</b>			Effective date: <b>14 February 2022</b>	
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## BRIEF ADMINISTRATION GUIDE

For detailed information refer to The Australasian Neonatal Medicines Formulary [heparin](#) guideline



**Critical Note:** there are minor variations between the ANMF and Waikato DHB best practice within this drug guideline – see **yellow shaded text**

- Indications:**
- Maintaining patency of umbilical or peripheral arterial lines
  - Neonatal thrombosis (*Note: should only be used in pre-term babies following consultation with Auckland Children's Hospital Haematologist*)

**Route:** Intravenous, intra-arterial

Supplied as:

- Heparin sodium 1000 units/mL, 1 or 5 mL ampoule (pH 5-8)
- Heparinised saline 10 units/mL, 5 mL ampoule

**Dose:** Maintaining patency of arterial lines  
 Umbilical arterial catheter: 0.5 mL/hr of 1 unit/mL solution  
 Peripheral arterial line: 0.8 – 1 mL/hr of 1 unit/mL solution

### Thrombosis

Initially 75 units/kg over 30 minutes then **25** units/kg/hr adjusted according to APTT.

### **Dose adjustment of heparin based on APTT**

APTT (seconds)	Bolus (units/kg)	Hold (mins)	Rate change (%)	Time until repeat APTT
< 50	50	0	+10	6 hours
50 - 59	0	0	+10	6 hours
60 – 85	0	0	No change	Next day or as per SMO advice
86 - 95	0	0	-10	6 hours
96 – 120	0	30	-10	6 hours
> 120	0	60	-10	6 hours

## Preparation and administration


**Compatible fluids:** glucose 5%, glucose 10%, sodium chloride 0.9%, sodium chloride 0.45%  
*Note: Invert container a minimum of 6 times to ensure adequate mixing of heparin with solution. Also invert container once per shift to prevent drug pooling).*

### Maintaining patency of arterial lines

- **Option 1:** Draw up 50 units (5 mL) of heparinised saline 10 units/mL and make up to 50 mL in a syringe with compatible fluid. Mix well – see note below.
- **Option 2:** Draw up 500 units (0.5 mL) of 1,000 units/mL heparin and add to a 500mL bag of compatible fluid (resulting solution has a concentration of 1 unit/ml). Mix well – see note below.
- Draw up 50 mL of this **1 unit/mL** solution in a 50 mL syringe.
- Administer via a Guardrails profiled syringe driver at the prescribed rate

### Thrombosis

- Prepare a solution of heparin **100 units/mL** by drawing up 3 mL of 1,000 units/mL heparin and adding to 27 mL of compatible fluid.
- Administer load over 30 minutes, then start maintenance infusion. Adjust according to APTT.

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## Monitoring

**For thrombosis** (no specific monitoring required for line patency):

- Four hours after initiating therapy, measure APTT then adjust dose to achieve an APTT of 60-85 seconds. Recheck APTT every 6 hours until stable then daily.
- Platelet count every 2 to 3 days
- For signs of bleeding and thrombosis. Ensure [protamine](#) is available for reversal if required.

No specific monitoring required if using for line patency

## Storage and Stability

- The diluted solution (1 unit/mL) is stable for 48 hours at room temperature (but must keep inverting container to prevent drug pooling)
- Discard any remaining solution in the ampoule once opened.

## Competency for administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Waikato DHB Generic Medicine Management and IV certification as well as Neonatal specific competency NCV/NAC and NIC2.

## Guardrails Information

Only heparinised saline (for maintaining line patency) is currently Guardrail profiled on the CC pump for NICU.

Guardrails Drug Name	Heparinised saline
<b>Concentration (unit/mL)</b>	
Minimum	1
Maximum	1
<b>Administration Rate (units/hr)</b>	
Soft minimum	0.25
Default	0.5
Soft maximum	1
Hard maximum	1.5

The below entries for thrombosis; load (LD) and maintenance (MTN) will be added to the pump in 2022.


Guardrails Drug Name	Heparin load(thromb*	Heparin maint(thromb
<b>Concentration (unit/mL)</b>		
Standard	100	100
Minimum	60	60
Maximum	500	500
<b>Administration Rate (units/kg/hr)</b>		
Soft minimum	100	25
Default	95	15
Soft maximum	150	35
Hard maximum	450	40

## Associated documents

- Waikato DHB guideline [Arterial Line – Sampling, Nursing Management and Removal in NICU](#)
- Waikato DHB guideline [Arterial Line Catheterisation in Newborn Intensive Care Unit](#)
- Waikato DHB guideline [Umbilical Arterial and Vein Catheterisation in the Neonate](#)
- Australasian Neonatal Medicines Formulary. [Protamine 2021](#)

## References

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## Appendix

**Table 1:** Infusion rates when using heparin concentration **100 units/mL** for thrombosis

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.1	1.2	1.3	1.4	1.5
Weight (kg)	<b>Approximate units/kg/hr</b>														
0.5	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
1	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
1.5	7	13	20	27	33	40	47	53	60	67	73	80	87	93	100
2	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
2.5	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
3	3	7	10	13	17	20	23	27	30	33	37	40	43	47	50
3.5	3	6	9	11	14	17	20	23	26	29	31	34	37	40	43
4	3	5	8	10	13	15	18	20	23	25	28	30	33	35	38
4.5	2	4	7	9	11	13	16	18	20	22	24	27	29	31	33
5	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30