SW014

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Mat. No.: 10196626

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SEE OVER FOR DECISION SUPPORT

Queensland Government

Heparin Intravenous Infusion Order and Administration - Adult

Facility / Service: ....

Ward / Unit: .... Year: 20..............

Attach ADR Sticker
(See Medication Chart for details)

☐ NKDA
☐ Unknown

Sign............................Print............................Date............

Heparin Intravenous Infusion Baseline Information

Date	Indication	Target APTT Range	Weight
/ /		sec (Refer to nomograms overleaf)	kg
Baseline Platelets (140–400 ×10⁹/L)	**CAUTION If any of these recently administered, see overleaf:** - Wararin or antiplatelet therapy - Parenteral or oral anticoagulants - Fibrinolytic agents (Thrombolytics)		
Baseline APTT (26–41 secs)	Prescriber Signature	Print Your Name	Contact

(Affix identification label here)

URN:
Family name:
Given name(s):
Address:
Date of birth:
Sex: ☐ M ☐ F ☐ I

NOT A VALID PRESCRIPTION UNLESS IDENTIFIERS PRESENT

First Clinician to Print Patient Name and Check Label Correct:..............................

Heparin Monitoring | Heparin Ordering | Heparin Administration | Syringe Set Up | Pharmaceutical Review

Heparin Ordering: Use Sodium Heparin 25 000 units in 50mL with 0.9% Sodium Chloride (500 units/mL) pre-filled SYRINGE for bolus and infusion. See overleaf for rate calculations and maximum recommended doses

Heparin Administration: Check dose calculations as per APTT nomogram

Syringe Set Up: Change the syringe at least every 24 hours and tubing every time the syringe is changed.

Date and Time APTT Taken	APTT	Daily Platelet Count (140-400 x10⁹/L)	Date and Time of Order	Bolus	With-hold	Rate change +/-	Infusion Rate (Caution if over 2 000 units/hr)	Signature / Print Name	Date and Time Next APTT Due	Date and Time of Change or Check	Bolus Given	Time stopped	Time restarted	Infusion Rate (Seek advice if over 2 000 units/hr)		Nurse 1 / Nurse 2	Date and Start Time	Set up sign 1 / Set up sign 2	Pharmaceutical Review:
/ :	sec		/ :	units	mins	units/hr	units/hr		/ :	/ :	units	:	:	units/hr	mL/hr		/ :		
/ :	sec		/ :	units	mins	units/hr	units/hr		/ :	/ :	units	:	:	units/hr	mL/hr		/ :		
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/ :	sec		/ :	units	mins	units/hr	units/hr		/ :	/ :	units	:	:	units/hr	mL/hr		/ :		

1 Baseline Information

Organise baseline coagulation profile and full blood count. If either are abnormal, SEEK ADVICE before proceeding. Complete indication, target APTT range (see nomograms), patient weight, baseline platelets and APTT.

Recent Antithrombotic/Thrombolytic Therapy

Warfarin or Antiplatelet therapy

There is a higher risk of bleeding complications if IV heparin is administered with agents such as warfarin, asprin, clopidogrel, prasugrel, ticagrelor and glycoprotein IIb/IIIa receptor inhibitors (e.g. abciximab, tirofiban). If patient is on warfarin, commencement of heparin is not recommended unless INR is less than 2. If heparin is indicated when INR is greater than 2, SEEK ADVICE before proceeding.

CAUTION: IV heparin must NOT be administered at the same time as these agents.

Low Molecular Weight Heparins (e.g. enoxaparin, dalteparin, fondaparinux), **or** **Direct Oral Anticoagulants** (e.g. rivaroxaban, dabigatran, apixaban)

If any of these medications is recently administered, SEEK ADVICE regarding initiation of IV heparin or recommencing oral anticoagulation (refer to appropriate Queensland Health Guidelines).

Thrombolytic agents (fibrinolytic) e.g. reteplase, alteplase
Seek advice or follow local unit-specific protocols

2 Heparin Monitoring

Platelets: Review daily and document on form to screen for heparin-induced thrombocytopenia/thrombosis (HITTS) – if platelet count is less than 100 × 10^9/L or falls by more than 30 per cent from baseline, seek advice about ongoing management.

APTT: Review as recommended in nomograms (see section 5). **Do not take blood for venepuncture from the arm where IV heparin is infusing.** If another site cannot be found, the infusion must be turned off for a minimum of 10 minutes. If blood is sampled from a central venous administration device, ensure local hospital procedures are followed.

3 INITIAL Heparin Bolus and Infusion Rate (round to closest 50 units/hr)

Indication	Initial bolus	Initial Infusion rate
Warfarin Therapy Replacement or **Acute Coronary Syndrome**	**60 units/kg** (**with** thrombolytic: max 4 000 units **no** thrombolytic: max 5 000 units)	**12 units/kg/hr** (max 1 000 units/hr)
Acute Treatment of Pulmonary Embolism or Deep Vein Thrombosis	**80 units/kg** (max 8 000 units)	**18 units/kg/hr** (max 1 500 units/hr)
For specialist surgical indications refer to Medical Officer or unit specific protocols.		

4 Heparin Administration – Infusion Rates

Conversion of units/hr to mL/hr for Sodium Heparin 25 000 units in 50mL with 0.9% Sodium Chloride prefilled SYRINGE (i.e. 500 units/mL).

Rate units/hr	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
Rate mL/hr	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7

Rate units/hr	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
Rate mL/hr	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0

5 Nomograms for Adjusting ONGOING Heparin Infusion Rate (round to closest 50 units/hr)

Warfarin Therapy Replacement or Acute Coronary Syndrome

If APTT not in target range within 24 hours, SEEK ADVICE.

Queensland Health APTT (sec)	Heparin bolus dose (max 5 000 units)	Withhold Infusion (min)	Infusion Rate Change in units/kg/hr	Repeat APTT
less than 55	60 units/kg	0	+3 units/kg/hr	4–6 hours
55–70	0	0	+2 units/kg/hr	4–6 hours
71–100	Target APTT range – no change			4-6 hours until 2 consecutive APTTs within range, then next morning (within 24 hours)
101–120	0	0	-1 units/kg/hr	4–6 hours
121–140	0	30	-2 units/kg/hr	4–6 hours
141–200	0	60	-3 units/kg/hr	4–6 hours

more than 200: **STOP INFUSION** Check patient for bleeding Contact medical registrar immediately → **Check weight, bolus and infusion rate calculations, and infusion pump settings** → **Withhold for 90 min** → **After 90min** Take APTT and restart infusion at -3units/kg/hr. **Do not re-bolus**
- **APTT more than 200**: **STOP INFUSION** and seek senior medical review
- **APTT less than 200**: Continue at current rate and repeat APTT in 4 hours

Full flowchart available at: http://qheps.health.qld.gov.au/medicines/docs/alert-aptt-flowchart.pdf

Acute Treatment of Pulmonary Embolism or Deep Vein Thrombosis

If APTT not in target range within 24 hours, SEEK ADVICE.

Queensland Health APTT (sec)	Heparin bolus dose (max 8 000 units)	Withhold Infusion (min)	Infusion Rate Change in units/kg/hr	Repeat APTT
less than 55	80 units/kg	0	+4 units/kg/hr	4–6 hours
55–70	40 units/kg	0	+2 units/kg/hr	4–6 hours
71–110	Target APTT range – no change			4-6 hours until 2 consecutive APTTs within range, then next morning (within 24 hours)
111–130	0	0	-2 units/kg/hr	4–6 hours
131–200	0	60	-3 units/kg/hr	4–6 hours

more than 200: **STOP INFUSION** Check patient for bleeding Contact medical registrar immediately → **Check weight, bolus and infusion rate calculations, and infusion pump settings** → **Withhold for 90 min** → **After 90min** Take APTT and restart infusion at -3units/kg/hr. **Do not re-bolus**
- **APTT more than 200**: **STOP INFUSION** and seek senior medical review
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Full flowchart available at: http://qheps.health.qld.gov.au/medicines/docs/alert-aptt-flowchart.pdf

6 Reversal of Heparin if Life Threatening Haemorrhage – SEEK SPECIALIST ADVICE

Precaution: Injection of protamine sulphate carries a risk of anaphylaxis. Caution with patients who have previously received protamine, patients on long term protamine insulin, patients allergic to fish.

Administer protamine sulphate by slow intravenous injection over at least 10 minutes with a maximum single dose of 50mg. Protamine dose is dependent on the amount of heparin adminstered in previous two hours (including bolus and infusion) and when the heparin infusion was stopped:

- if within 15 minutes, giving 1mg of protamine will neutralise 100 units of heparin;
- if more than 15 minutes, SEEK ADVICE as heparin is excreted rapidly and less protamine is required.

For more information contact medicationsafety@health.qld.gov.au

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