



SW014 - v3.00 - 11/2007

DO NOT WRITE IN THIS BINDING MARGIN



Mat.: 10196626

SEE OVER FOR DECISION SUPPORT

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<p>HEPARIN INTRAVENOUS INFUSION ORDER & ADMINISTRATION FORM</p> <p>Facility/Service:</p> <p>Ward/Unit:</p> <p>Attach ADR Sticker</p> <p>YEAR: 20</p> <p><i>(See Medication Chart for details)</i></p>	<p>Sodium Heparin 25 000 units diluted to 50mL with 0.9% Sodium Chloride (500 units/mL) ONLY</p>				<p>(Affix patient identification label here)</p>	
	Date	Indication	Target APTT Range (secs)	Weight (kg)	<p>URN:</p>	
	<p>CAUTION - tick if recently administered:</p> <p><i>(if any ticked, see over (2) for recommendations)</i></p> <p><input type="checkbox"/> Enoxaparin / LMWH*</p> <p><input type="checkbox"/> Fibrinolytic agent (thrombolysis)</p> <p><input type="checkbox"/> Warfarin / Antiplatelets</p>				<p>Family name:</p> <p>Given names:</p> <p>Address:</p>	
	Baseline Platelets (150-400 x10 ⁹ /L)	Prescriber Signature	Print Your Name	Contact	<p>Date of birth: Sex: <input type="checkbox"/> M <input type="checkbox"/> F</p>	
<p>First Clinician to Print Patient Name and Check Label Correct:</p>						

NOT A VALID PRESCRIPTION UNLESS IDENTIFIERS PRESENT

Heparin Monitoring			Heparin Ordering For INITIAL bolus & INITIAL rate calculations see over ORDER BELOW							Nursing Administration Record										Pharmacy Review:				
Date & Time APTT Taken	APTT (sec)	Platelet Count (150-400 x10 ⁹ /L)	Date & Time of Order	IV Bolus (units)	With-hold (mins)	Rate change (units/hr) +/-	Rate (units/hr)	Change Authorisation		Next APTT due	Heparin Administration						Syringe Set up and Stop Change syringe at least every 24 hours and tubing as per hospital policy							
								Signature	Print Name		Date & Time Change Made	IV Bolus Given (units)	Time stopped (reason)	Time restarted	Rate (units/hr)	Rate (mL/hr)	Nurse 1	Date & Start Time	Set up sig. 1		Volume Infused (mL)			

HEPARIN INTRAVENOUS INFUSION ORDER & ADMINISTRATION FORM

These are guidelines only, based on available literature to date. They have been developed for use in an adult population.

1 Organise baseline APTT and full blood count

Seek appropriate advice if baseline results abnormal.

Review platelets daily until day 14, or until heparin infusion is stopped, whichever occurs first to screen for heparin-induced thrombocytopenia/thrombosis (HITTS).¹ Seek advice if platelet count is less than 100 or falls by greater than 30% from baseline.

2 Complete Baseline Prescription (red shaded area)

Complete the prescription area on the front of the form including indication, target APTT range, patient weight and baseline platelets. Recommended target APTT ranges are:

- ACS[†], in place of Warfarin maintenance and neuro/vascular surgery: 65 - 90
- PE/DVT: 65 - 100

CAUTION: Enoxaparin / LMWH must NOT be administered at the same time as IV heparin Enoxaparin (Clexane™) or other Low Molecular Weight Heparins (LMWH)*

- If enoxaparin / LMWH recently administered, seek expert advice regarding initiation of IV heparin (as a guide, 10 hours post enoxaparin administration, depending on dose and co-existing conditions)

Fibrinolytic agent (thrombolysis)

- If streptokinase is indicated, and patient is on IV heparin, cease IV heparin and defer starting streptokinase until APTT is less than 90 secs; once complete, IV heparin should be re-started without a bolus when APTT is again less than 90 secs
- If administering IV heparin with other fibrinolytic agents (thrombolysis), other than streptokinase, see table in section 3 for recommendations on initial bolus and initial rates of infusion

Warfarin / Antiplatelets

When administering IV heparin with agents such as warfarin, aspirin, clopidogrel and glycoprotein IIb/IIIa receptor inhibitors, there is a higher risk of bleeding complications.

3 Complete the 'Heparin Ordering' Section

Recommendations for initial bolus and initial rates of infusion are tabled below (round to closest 50 units/hr)^{2,3}. *Individual specialist requirements may vary.*

Indication	Initial bolus	Initial rate
ACS [†] or in place of Warfarin maintenance	60 units/kg (with fibrinolytic: max 4 000 units no fibrinolytic: max 5 000 units)	12 units/kg/hr (max 1 000 units/hr)
Neuro/vascular Surgery	70 units/kg (max 5 000 units)	15 units/kg/hr (max 1 000 units/hr)
Pulmonary Emboli (PE) & Deep Vein Thrombosis (DVT)	80 units/kg (max 8 000 units)	18 units/kg/hr (max 1 500 units/hr)

[†]Acute Coronary Syndrome

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Approved by the Queensland Health Statewide Heparin Working Party and endorsed by Queensland Health Medication Safety Implementation Group.

¹ Warkentin TE, Greinacher A. Heparin-induced thrombocytopenia: recognition, treatment, and prevention: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. [erratum appears in Chest. 2005 Jan;127(1):416]. Chest. 126(3 Suppl):311S-337S, 2004 Sep.

² Hirsh J, Raschke R. Heparin and low-molecular-weight heparin: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. Chest. 126(3 Suppl):188S-203S, 2004 Sep.

³ Acute Coronary Syndrome Guidelines Working Group. Guidelines for the management of acute coronary syndromes 2006. Medical Journal of Australia. 184(8 Suppl):S9-29, 2006 Apr 17.

⁴ Zimmermann AT, Jeffries WS, McElroy H, Horowitz JD. Utility of a weight-based heparin nomogram for patients with acute coronary syndromes. Internal Medicine Journal. 33(1-2):18-25, 2003 Jan-Feb.

4 Organise APTT to be taken and checked 4 to 6 hours after initiation of IV heparin

5 Heparin Infusion Rates

Conversion of units/hr to mL/hr for **Sodium Heparin 25 000 units diluted to 50mL with 0.9% Sodium Chloride**, 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

6 Adjust Heparin Infusion Rate Based on Nomograms Below

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

(Round to closest 50 units/hr)

ACS[†], in place of Warfarin maintenance, neuro/vascular surgery^{3,4}

Queensland Health APTT (sec)	Heparin bolus dose (units)	Withhold Infusion (min)	Rate Change in units/kg/hr	Rate Change based on 70kg patient - rounded	Repeat APTT
< 50	60 units/kg	0	+3 units/kg/hr	+200 units/hr	4 - 6 hours
50 - 64	0	0	+2 units/kg/hr	+150 units/hr	4 - 6 hours
65 - 90	0	0	Target - no change	Target - no change	Next morning (within 24hrs)
91 - 100	0	0	-1 units/kg/hr	-100 units/hr	4 - 6 hours
101 - 110	0	30	-2 units/kg/hr	-150 units/hr	4 - 6 hours
> 110	0	60	-3 units/kg/hr	-200 units/hr	4 - 6 hours

PE/DVT²

Queensland Health APTT (sec)	Heparin bolus dose (units)	Withhold Infusion (min)	Rate Change in units/kg/hr	Rate Change based on 70kg patient - rounded	Repeat APTT
< 50	80 units/kg	0	+4 units/kg/hr	+250 units/hr	4 - 6 hours
50 - 64	40 units/kg	0	+2 units/kg/hr	+150 units/hr	4 - 6 hours
65 - 100	0	0	Target - no change	Target - no change	Next morning (within 24hrs)
101 - 110	0	0	-2 units/kg/hr	-150 units/hr	4 - 6 hours
> 110	0	60	-3 units/kg/hr	-200 units/hr	4 - 6 hours

Reversal of Heparin

Protamine is indicated for the treatment of **serious** heparin overdose. 1mg of protamine neutralises 100 units of heparin if given within 15 minutes of the heparin. If time since heparin administration is greater than 15 minutes, less protamine is required as heparin is excreted rapidly – SEEK ADVICE.²

Protamine sulphate injection should be administered by slow intravenous injection over a period of at least 10 minutes with a **maximum single dose of 50mg**.