



Intravenous Infusion Orders for Common Medications in the Intensive Care Unit Guideline

1. Purpose

To provide information on the prescribing and administration of common medications administered by intravenous infusion in Bunbury Hospital Intensive Care Unit, where not included or administration / route requirements differ from the WACHS [Critical Care Medication Administration for Adults Guideline](#). This information aims to support medical, nursing, midwifery and pharmacy staff in safe medication use.

2. Guideline

The intravenous infusion order information for individual medications is for use **only** within the Intensive Care Unit (ICU) at Bunbury Hospital, Western Australian Country Health Service (WACHS) – South West (SW).

The information is provided in table format and uses multiple abbreviations. A list is provided below.

Abbreviation	Full text meaning
ABG	Arterial blood gas
aPTT	Activated partial thromboplastin time
ARDS	Acute respiratory distress syndrome
BIS	Bispectral index
bpm	Beats per minute
BGL	Blood Glucose level
CK	Creatine kinase
CRRT	Continuous renal replacement therapy
DEHP	Diethylhexyl phthalate
ECG	Electrocardiogram
GCS	Glasgow coma scale
HR	Heart rate
IBW	Ideal body weight
IV	Intravenous
K+	Potassium
MAP	Mean arterial pressure
MO	Medical officer
Na+	Sodium
PCIA	Patient controlled intravenous analgesia
PE	Pulmonary embolism
PVC	Polyvinyl chloride
RR	Respiratory rate
RSS	Ramsay sedation score
SBP	Systolic blood pressure

Drug	Presentation	Standard prescription and location of prescription	Diluent ^{1,2} (preferred diluent in bold)	Usual Dose	Usual rate	Other information
Adrenaline (Epinephrine)	1 mg/mL	Central access only (syringe driver) 3 mg (single strength) in 50 mL 6 mg (double strength) in 50 mL (SW MR177) cont. Central access only (volumetric pump) 6 mg (single strength) in 100 mL 12 mg (double strength) in 100 mL (SW MR177)	Glucose 5% Sodium chloride 0.9%	(1-15 microg/min)	0-10 mL/hr	Titrate to HR / MAP/ SBP / bronchospasm.
Fentanyl	2000 microg/ 100 mL (Pre-mixed) CADD	Central and peripheral access Infusion (CADD pump): 2000 microg in 100 mL (MR170.5 / MR170.6)	Undiluted	See "Other information"	See "Other information"	Refer to the WACHS Intravenous Opioid Administration Policy. Monitor sedation score and respiratory rate along with other observations specified on the PCIA-IV Opioid Infusion Prescription and Additional Observation Chart.

Drug	Presentation	Standard prescription and location of prescription	Diluent ^{1,2} (preferred diluent in bold)	Usual Dose	Usual rate	Other information
Ketamine	200 mg/2 mL	Central and peripheral access (volumetric pump) For Analgesia: 200 mg in 100 mL (see “Other information”)	Sodium chloride 0.9% Glucose 5%	0-10 mg/hr (0.1-0.2 mg/kg/hr)	0-5 mL/hr	Refer to WACHS-SW Ketamine Infusion (Low Dose Intravenous Analgesia) in the Acute Care setting Procedure and SW MR113A Ketamine Infusion Analgesia Record.
		Central and peripheral access (volumetric pump) For sedation (critically ill patients): 200 mg in 100 mL (SW MR177)		0.5-1 mg/kg/hour Start at lower dosage listed and titrate to effect	0.5-1 mg/kg/hour	Titrate to analgesic effect/sedation. Intensivist to annotate order with rate and sedation score target.
		Central and peripheral access (volumetric pump) For refractory asthma management 200 mg in 100 mL (SW MR177)		Initial bolus: 0.5 – 1 mg/kg Usual Range: 0.5 – 2 mg/kg/hr	0.5–2 mg/kg/hr	Higher doses may be used under the direction of an intensivist for bronchospasm or by an emergency consultant. Continuous oxygen monitoring required.

Drug	Presentation	Standard prescription and location of prescription	Diluent ^{1,2} (preferred diluent in bold)	Usual Dose	Usual rate	Other information
Morphine	10 mg/mL 30 mg/mL	Central and peripheral access (CADD pump) 100 mg in 100 mL (MR170.5/MR170.6)	Sodium chloride 0.9%	See "Other information"	See "Other information"	Refer to WACHS Intravenous Opioid Administration Policy. Monitor Ramsay Sedation Score and respiratory rate along with other observations specified on the PCIA-IV Opioid Infusion Prescription and Additional Observation Chart.
Noradrenaline (Norepinephrine) (Continued on next page)	4 mg/4 mL	Central access only (syringe driver) 4 mg (single strength) in 50 mL 8 mg (double strength) in 50 mL 16 mg (quad strength) in 50 mL (SW MR177) Central access only (volumetric pump) 8 mg (single strength) in 100 mL 16 mg (double strength) in 100 mL 32 mg (quad strength) in 100 mL (SW MR177)	Glucose 5% Sodium Chloride 0.9%	Initial dose: 5 microg/min. Titrate to Mean Arterial Pressure (MAP) Usual dose 0.01-0.5 microg/kg/min	Start at 5 mL/hr then titrate.	DO NOT BOLUS Continuous cardiac monitoring required. High doses >2 microg/kg/min (100 mL/hr single strength) may be needed in severe septic shock. Extravasation can cause tissue necrosis. If this occurs, refer to WACHS Peripheral Vasopressor Infusion Guideline – Adults.

Drug	Presentation	Standard prescription and location of prescription	Diluent ^{1,2} (preferred diluent in bold)	Usual Dose	Usual rate	Other information
Noradrenaline (Norepinephrine) (Continued)	4 mg/4 mL	Peripheral access-large vein (volumetric pump) <i>(only in emergency situations where a central line is unavailable)</i> 4 mg in 500 mL	Glucose 5% Sodium Chloride 0.9%	Initial Rate: 2 to 5 microg/min Titrate to MAP (Max 10 microg/min)	15 to 37.5 mL/hr (Max 75 mL/hr)	DO NOT BOLUS Extravasation can cause tissue necrosis. If this occurs, refer to WACHS Peripheral Vasopressor Infusion Guideline – Adults.

3. Roles and Responsibilities

Authorised prescribers, including medical practitioners, nurse practitioners and endorsed midwives are responsible for:

- ensuring adequate assessment and history relative to the urgency of the situation is available before prescribing medications
- documenting relevant risk assessments prior to prescribing (i.e. Venous thromboembolism (VTE) risk assessment).
- writing all orders on a WACHS approved medication chart for administration within the health service, ensuring they are complete and unambiguous.
- endorsing any verbal orders, or providing documentation to confirm the verbal order
- recording the administration of medication on an appropriate medication chart.

The **nurse or midwife** is accountable for the safe administration of medications. This requires:

- a sound knowledge of the use, action and usual dose, frequency of use, route of administration, precautions and adverse effects of the medications being administered
- training has been completed in accordance with the nursing framework including medication safety training, best possible medication history training and infusion pump training
- they maintain competency with the medications available in their work environment.

Pharmacists are responsible for:

- assessment and documentation of medication history prior to admission to hospital
- clinical review of the prescribed medications during the course of the admission
- assist in preparation of medication list on discharge for complex patients and communication of the list to other care providers.

All staff are required to work within policies and guidelines to make sure that WACHS is a safe, equitable and positive place to be.

4. Monitoring and Evaluation

4.1 Monitoring

Bunbury Hospital ICU is to evaluate clinical incidents related to administration of IV medications and trends should be reported to the WACHS-SW Medication Safety Committee.

4.2 Evaluation

The evaluation of this document will be managed via the WACHS-SW Medication Safety Committee, utilising expertise from the Bunbury Hospital critical Care directorate medical, nursing and pharmacy staff for currency of information, in line with review timelines for this document.

5. Compliance

This guideline supports compliance with the WACHS-SW Medication Prescribing and Administration Policy and best practice for medication safety.

Guidelines are designed to provide staff with evidence-based recommendations to support appropriate actions in specific settings and circumstances. As such, WACHS guidelines should be followed in the first instance. In the clinical context, where a patient's management should vary from an endorsed WACHS guideline, this variation and the clinical opinion as to reasons for variation must be documented in accordance with the [Documentation Clinical Practice Standard](#).

WACHS staff are reminded that compliance with all policies and procedures is mandatory.

6. References

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[WA Department of Health WA Anticoagulant Chart](#) (Internet page). [Accessed online 2023]

7. Definitions

Nil

8. Document Summary

Coverage	WACHS – SW Bunbury Hospital Intensive Care Unit
Audience	Nursing, midwifery, medical and pharmacy staff
Records Management	Clinical: Health Record Management Policy
Related Legislation	Medicines and Poisons Act 2014 (WA) Medicines and Poisons Regulations 2016 (WA)
Related Mandatory Policies / Frameworks	<ul style="list-style-type: none"> • MP 0131/20 – High Risk Medication Policy • Clinical Governance, Safety and Quality Framework
Related WACHS Policy Documents	<ul style="list-style-type: none"> • Medication Prescribing and Administration Policy • Intravenous Opioid Administration Policy • Specialised Medication – Intravenous Glyceryl Trinitrate Guideline • Specialised Medication – Phosphate Supplementation in Adults Guideline • Handling and Supply of Potassium Ampoules Procedure • Ketamine Infusion (Low Dose Intravenous Analgesia) in the Acute Care setting Procedure (WACHS-SW) • Critical Care Medication Administration Guideline for Adults (WACHS)
Related Forms	<ul style="list-style-type: none"> • MR113A WACHS SW Ketamine Infusion Analgesia Record • MR170.5 WACHS PCIA/IV Opioid Infusion Prescription & Additional Observation Chart • MR170.6 WACHS PCIA/IV Opioid Infusion Continuation Sheet • MR170A WACHS Hospital Medication Chart – Adult Short Stay • MR170C WACHS Anticoagulation chart • MR174H WACHS SW Intravenous Infusion Chart for CRRT Calcium Chloride 10% Infusion (Bunbury ICU only) • MR176 Intravenous Fluid Treatment Chart • MR177 WACHS SW Intravenous Infusion Medication Chart Vasoactive/Sedative Agents Infusion
Aboriginal Health Impact Statement Declaration (ISD)	ISD Record ID: 2501
National Safety and Quality Health Service (NSQHS) Standards	4.01, 4.04, 4.143, 4.15
Aged Care Quality Standards	Nil
National Standards for Mental Health Services	Nil

9. Document Control

Version	Published date	Current from	Summary of changes
4.00	28 November 2023	28 November 2023	<ul style="list-style-type: none"> • Infusion monographs edited to be able to be utilised across both domains for Bunbury Critical Care and updated to reflect current practice. • Monographs added for alteplase, calcium gluconate, phosphate and magnesium. • Appendices added to support information for acetylcysteine in Paracetamol toxicity, dobutamine dosing, dopamine dosing, heparin infusion for fluid restricted patients and infusion rates for sodium nitroprusside. • Change of title
4.01	15 August 2024	28 November 2024	<ul style="list-style-type: none"> • Minor amendment to fix error in table on page 3.
4.02	16 August 2024	28 November 2024	<ul style="list-style-type: none"> • Further amendment to table on page 3.
4.03	18 November 2024	28 November 2024	<ul style="list-style-type: none"> • Change of title and scope to reflect restriction to Bunbury ICU only. • Critical Care Medication Administration Guideline for Adults supersedes this guideline in Bunbury ED.
4.04	02 January 2025	02 January 2025	<ul style="list-style-type: none"> • Consolidation of content with Critical Care Medication Administration Guideline for Adults to leave only Bunbury Hospital ICU protocols.

10. Approval

Policy Owner	Executive Director South West
Co-approver	Executive Director Clinical Excellence Executive Director Nursing and Midwifery
Contact	WACHS-SW Regional Chief Pharmacist
Business Unit	Clinical Services
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