High Risk Medications Procedure

1. Guiding Principles

High risk medicines are medicines that have an increased risk of causing significant patient harm or death if they are misused or used in error.[1] The National Safety and Quality Health Service Standards require organisations to identify high risk medications and have systems in place to manage them safely.[2] This policy complies with the requirements of WA Health High Risk Medication Policy – MP 0131/20

This procedure highlights the specific medications and processes for WA Country Health Service (WACHS) sites relating to the storage, handling, prescription, administration and dispensing of high risk medications to improve patient safety.

2. Procedure

This list of high risk medications is based on the Australian Commission for Safety and Quality in Healthcare list[1]:

- A Antimicrobials
- P Potassium and other electrolytes; Psychotropic medications
- I Insulin and insulin-like substances
- N Narcotics/Opioids; Neuromuscular blocking agents
- C Chemotherapeutic/cytotoxic agents
- H Heparin and other anticoagulants
- S Safer Systems (e.g. safe administration of liquid medications using enteral syringes)

Additional medications to be considered high risk within WACHS facilities include:

- Schedule 4 Restricted Medications
- Phenytoin
- Monoclonal Antibodies
- Voluntary assisted dying (VAD) substance

See High Risk Medication List (Appendix A) for detailed information on these specific agents.

Additional information on individual agents should be sought from the Australian Medicines Handbook (AMH), the Society of Hospital Pharmacists of Australia (SHPA) Australian Injectable Drugs Handbook, Therapeutic Guidelines, individual product information and the specified references found in Appendix A.

Restrictions on prescribing are outlined within the Statewide Medication Formulary Policy. Restricted medications on the formulary are to be prescribed by practitioners working within the specialty teams defined within the Formulary. Where a specialty

listed in the formulary is not available in the region, prescribing teams must seek the advice of the appropriate specialty prior to prescribing.

For information and prescribing restrictions related to the Voluntary Assisted Dying substance refer to the WACHS Voluntary Assisted Dying Policy and the WA Voluntary Assisted Dying Guidelines.

All prescribing and administration of high risk medications shall be in accordance with the WACHS Prescribing and Administration Policy.

Prior to prescribing or administering any medication, staff must follow safe medication practices. This includes adhering to the six (6) principles of medication administration:

- Right medication
- Right individual (in accordance with WACHS Patient Identification Policy)
- Right dose
- Right time
- Right route
- Right documentation

3. Definitions

Nil

4. Roles and Responsibilities

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

5. Compliance

Failure to comply with this procedure may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Integrity Policy Framework issued pursuant to section 26 of the *Health Services Act 2016* (WA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

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

6. Records Management

Health Record Management Policy

7. Monitoring and Evaluation

7.1 Monitoring

Managers of clinical areas, health sites and services are responsible for monitoring compliance with this procedure.

Any variance from this procedure should be under the guidance of a senior medical practitioner and reported by the nurse manager to the Regional Drugs and Therapeutics Committee. This will prompt a review of the procedure.

7.2 Evaluation

Adverse events and clinical incidents relating to the prescribing and administration of this medicine are to be reported and managed as per the WACHS Medication Prescribing and Administration Policy.

Overall monitoring of compliance with this document is to be carried out by the WACHS Safety and Quality unit in conjunction with the WACHS Medication Safety Committee by the following means:

- WACHS Safety and Quality unit to report a review of clinical incident data relevant to high risk medications to the WACHS Medication Safety Committee
- WACHS Medication Safety Committee to refer any trends in clinical incident data relevant to high risk medications to the regional Medication Safety Group or equivalent.

8. Standards

National Safety and Quality Health Service Standards

Clinical Governance Standard: 1.03, 1.07, 1.27

Preventing and Controlling Infections Standard: 3.18, 3.19

Medication Safety Standard: 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.13, 4.14, 4.15

National Standards for Mental Health Services 1.2, 1.3, 1.6, 1.10, 1.12, 2.4, 6.7, 6.8, 6.9, 8.4, 8.10, 10.4.8, 10.5

Chief Psychiatrist's Clinical Care Standards

9. Legislation

Medicines and Poisons Act 2014
Medicines and Poisons Regulations 2016
Voluntary Assisted Dying Act 2019
Mental Health Act 2014 (WA)

10. References

1. Australian Commission on Safety and Quality in Health Care. High Risk Medicines Sydney [28th September 2018]. Available from: https://www.safetyandquality.gov.au/our-work/medication-safety/high-risk-medicines/
2. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards 2nd Ed. Medication Safety Standard 4. Sydney: ACSQHC; 2017. p. 29-36.
3. Institute for Safe Medication Practices. Targeted Medication Safety Best Practices for Hospitals 2020-2021. [21st November 2022]. Available from: https://www.ismp.org/guidelines/best-practices-hospitals.

11. Related Forms

MR1B WACHS Chest Pain Pathway (Emergency Chest Pain Kit)
MR12 WACHS Emergency Department Procedural Sedation Record
MR113a WACHS South-West Ketamine Infusion Analgesia Record
MR156A WACHS Insulin Subcutaneous Order and Blood Glucose Record - Adult Form
MR156B WACHS Obstetric Subcutaneous Insulin Order and Blood Glucose Record
MR157A WACHS Insulin Infusion Order Chart
MR157D WACHS –South West Adult Diabetic Ketoacidosis (DKA) Treatment & Monitoring Chart
MR170.2 WACHS Epidural / Spinal Prescription and Additional Observation Chart
MR170.3 WACHS Epidural / Spinal Morphine Record
MR 170.4 WA Adult Clozapine Initiation and Titration Chart
MR170.5 WACHS PCIA-IV Opioid Infusion Prescription and Additional Observation Chart
MR170.6 WACHS PCIA-IV Opioid Infusion Continuation Sheet
MR170C WACHS Anticoagulant Medication Chart
MR170H WACHS Continuous Subcutaneous Infusion Chart
MR170H.1 WACHS Subcutaneous Medication Calculation Sheet
MR170i WACHS Intrathecal Therapy (Palliative) Prescription and Additional Observation Record
MR170i.1 WACHS Intrathecal Therapy (Palliative) Continuation Sheet
MR170K WACHS Regional Analgesia Prescription and Additional Observation Record
MR170K.1 WACHS Regional Analgesia Continuation Sheet
MR172 WACHS Tenecteplase Kit
MR172A WACHS Tenecteplase Checklist
MR173A WACHS Specialised Medication - Infliximab Pre-Infusion Checklist
MR173B WACHS Specialised Medication - Natalizumab Pre-Infusion Checklist
MR173C WACHS Intravenous Iron Consent and Prescription
MR173D WACHS Specialised Medication - Rituximab Pre-Infusion Checklist

MR173E WACHS Specialised Medication - Abatacept Pre-Infusion Checklist
MR137F WACHS Specialised Medication - Tocilizumab Pre-Infusion Checklist

12. Related Policy Documents

CAMHS Psychotropic Medication – Monitoring Adverse Physical Health Effects Policy
Chief Psychiatrist Western Australia - Policy for Mandatory Reporting of Notifiable Incidents to the Chief Psychiatrist
PCH Diabetic Ketoacidosis - Assessment and Management
PCH Diabetes Sick Day Management
PCH Diabetes Hypoglycaemia Management
PCH Insulin Pump Management
PCH Oral Conscious Sedation Non Anaesthetic Personnel
PCH: Phenytoin – Paediatric
PCH Potassium Chloride – Paediatric
WACHS Acute Stroke Clinical Standards and Guidelines - EUCP Policy
WACHS Anticancer Therapy Prescribing Procedure.
WACHS Antimicrobial Stewardship Policy
WACHS Cardiac Thrombolysis Pack Contents List
WACHS Cancer Institute NSW - Standard Cancer Treatments - eviQ - EUCP Policy
WACHS Child and Adolescent Mental Health Services Resources EUCP Policy
WACHS Cognitive Impairment Clinical Practice Standard
WACHS Diabetes - Inpatient Management Clinical Practice Standard
WACHS Epidural / Spinal Analgesia Management Policy
WACHS Great Southern Management of Potassium Ampoules Procedure - Albany Hospital
WACHS Intrathecal Pain Management in the Palliative Care Setting Procedure
WACHS Intravenous Opioid Administration Policy
WACHS Medication Handling and Accountability Policy
WACHS Medication Prescribing and Administration Policy
WACHS Midwest Supply and Management of Potassium Ampoules Procedure Midwest
WACHS Nurse Compounding of Antibiotics in Elastomeric Devices Guideline
WACHS Oxygen Therapy and Respiratory Devices - Adults Clinical Practice Standard
WACHS Patient Identification Policy
WACHS Regional Analgesia Management (Adult) Procedure
WACHS Sedation for Mental Health Patients Awaiting Aeromedical Transfer Guideline
WACHS Sedation Process for Mental Health Patients Flowchart
WACHS Subcutaneous Infusions in the Palliative Care Setting via CADD®-Solis Procedure
WACHS Subcutaneous Infusions in the Palliative Care Setting via NIKI T33™ Procedure
WACHS Systemic Anticancer Therapy Guideline

WACHS South West Adult Diabetic Ketoacidosis (DKA) Guideline
WACHS South West Handling and completion of entries in Schedule 4 Restricted and Schedule 8 Registers and Requisitions Books Information Sheet
WACHS South West Handling and Storage of Patient's Own Medications – including Schedule 4 Restricted and Schedule 8 Medications Procedure
WACHS South West Handling and Supply of Potassium Ampoules Procedure
WACHS South West Ketamine Infusion (Low Dose Intravenous Analgesia) in the Acute Care Setting Procedure
WACHS Specialised Medication - Abatacept Guideline
WACHS Specialised Medication Guideline – Phosphate
WACHS Specialised Medication - Infliximab Guideline
WACHS Specialised Medication - Intravenous Aminoglycosides for ADULT Non-pregnant Patients Guideline
WACHS Specialised Medication – Intravenous Vancomycin in Adults Guideline
WACHS Specialised Medication - Lithium (Adult Patients) Guideline
WACHS Specialised Medication - Natalizumab Guideline
WACHS Specialised Medication – Phenytoin (Injectable) for Adult Patients Guideline
WACHS Specialised Medication Guideline – Phosphate
WACHS Specialised Medicine – Potassium Supplementation Policy
WACHS Specialised Medication - Rituximab Guideline
WACHS Specialised Medication - Tocilizumab Guideline
WACHS Voluntary Assisted Dying Policy
WACHS Zuclopenthixol Acetate (Clopixol Acuphase®) Monitoring Guideline

13. Related WA Health System Policies

Clinical Incident Management Policy – MP 0122/19
High Risk Medication Policy – MP 0131/20
Guidelines for Managing Specific High Risk Medications Relevant to the Organisation
Mandatory Standard for Intravenous Potassium
Mandatory Standard for Vinca Alkaloids
Medication Chart Policy – MP 0078/18
Medicines Handling Policy – MP 139/20
Medication Review Policy – MP 0104/19
WA Health Code of practice for clinical and related waste management

14. Policy Frameworks

Clinical Governance, Safety and Quality Policy Framework
Public Health

15. Appendix

Appendix A: High Risk Medication List

This document can be made available in alternative formats on request for a person with a disability

Contact:	Chief Pharmacist		
Directorate:	Clinical Excellence	**EDRMS Record #**	ED-CO-15-20291
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1 Antimicrobials

The WA Country Health Service (WACHS) endorses the use of the Therapeutic Guidelines: Antibiotic as the primary reference to guide the prescribing of antimicrobials.

Each region should have an Antimicrobial Stewardship Program managed by a relevant governance committee. This group may impose additional restrictions on the prescribing of antimicrobials above the Therapeutic Guidelines: Antibiotic or develop local procedures as necessary.

All antimicrobial prescribing, selection, dose and duration should follow the MINDME acronym.

M Microbial Guidelines where possible (Therapeutic Guidelines: Antibiotic current version, or local guidelines determined by resistance patterns)
I Indications should be evidence based
N Narrowest spectrum
D Dosage appropriate for site and type of infection
M Minimise duration of therapy. Where possible a specific termination date is to be written on the medication chart.
E Ensure monotherapy where possible

Automatic stop orders may apply to the administration of intravenous, oral and topical antimicrobials at the direction of the regional Antimicrobial Stewardship Program and as per the WACHS Antimicrobial Stewardship Policy.

Intravenous (IV) antimicrobial orders should be reviewed as a minimum every third day. Transition from IV to oral therapy should occur as soon as clinically suitable.

Australian Commission on Safety and Quality in Health Care

- Antimicrobial Stewardship Clinical Care Standard

WACHS

- WACHS Antimicrobial Stewardship Policy
- WACHS Nurse Compounding of Antibiotics in Elastomeric Devices Guideline for patients at home on long term antibiotics under Home Nursing Discharge Service or Hospital In The Home services

Refer to: Therapeutic Guidelines - Antibiotic (library site)

Specific antimicrobials that have a high risk of causing harm are detailed below.

1.1 Aminoglycosides (parenteral gentamicin, tobramycin, amikacin)

Incorrect dosing with respect to age, ideal body weight and renal function may result in significant ototoxicity and nephrotoxicity. Under-dosing may result in treatment failure. Monitoring of serum levels, with appropriate dose adjustment, should be undertaken in all patients where therapy is expected to continue beyond 48 hrs (patients with unstable renal function should be monitored daily).

WACHS

- WACHS Specialised Medication - Intravenous Aminoglycosides for ADULT Non-pregnant Patients Guideline

1.2 Amphotericin

Confusion between the intravenous (IV) formulations of amphotericin may result in errors, both in prescribing and administration. Awareness of the multiple formulations and differing dosage and administration recommendations will help reduce the risk of under- or over-dosing and potential associated toxicity.

Prescribing using both generic/medication name and brand name is recommended.

1.3 Nebulised antibiotics and antifungals

Approved antibiotics and antifungals requiring nebulisation are to be administered via a filtered nebuliser system to prevent aerolisation of the medicine into the environment and subsequent exposure of staff and other patients. The WACHS Oxygen Therapy and Respiratory Devices - Adults Clinical Practice Standard should be followed for the administration of inhaled medications.

As well as standard nebulised antibiotic/antifungal precautions, nebulised pentamidine MUST be administered in a negative pressure room.

Refer to section 8.7 below also.

WACHS

- WACHS Oxygen Therapy and Respiratory Devices - Adults Clinical Practice Standard

1.4 Guanine analogue anti-virals (aciclovir, valaciclovir, famciclovir, valganciclovir)

Dose adjustment is required in renal impairment. Use in renal impairment can increase the risk of neurotoxicity. Adequate hydration is required to reduce the risk of nephrotoxicity (from crystallisation of the medication in the renal tubules).

1.5 Vancomycin

Incorrect dosing may rarely cause nephrotoxicity and ototoxicity. Under-dosing may result in treatment failure and the potential promotion/selection of resistant strains. Monitoring of serum levels, with appropriate dose adjustment is recommended for all patients treated with vancomycin for longer than 48 hours. Patients being treated beyond 48 hours should have trough levels taken in keeping with their clinical state, including increased monitoring for patients with impaired or unstable renal function, with a minimum of weekly monitoring at steady state (twice weekly prior).

Infusion rates of vancomycin should not exceed 10 mg/minute to reduce the risk of ‘red-man’ syndrome. Red man syndrome is a rate-dependent infusion reaction specific to vancomycin and is not a true allergic reaction. In contrast to IgE mediated allergic

reactions, this reaction is caused by direct activation of mast cells and can occur with the first administration of vancomycin. Clinical features include flushing, erythema and pruritus usually affecting the upper body, neck and face and less commonly, muscle spasms, dyspnoea and hypotension. In general, symptoms resolve once the infusion is ceased and later restarted at a slower rate. Careful consideration is needed when deciding whether the patient is recorded as having an adverse reaction or allergy to vancomcyin as this has clinical implications for future antimicrobial options.

WACHS
- WACHS Specialised Medication – Intravenous Vancomycin in Adults Guideline

1.6 Other

Other antimicrobials considered high risk, but not routinely utilised within WACHS, include cidofovir, flucytosine, foscarnet and ganciclovir. Should these medications be required please consult with your pharmacy department.

2 ANTI-PSYCHOTICS / PSYCHOTROPIC AGENTS

Psychotropic agents (including antipsychotics, antidepressants, benzodiazepines and stimulants) carry certain risks.

While psychotropics generally do not carry high risks as a broad category, they raise risks within different subgroups or situations:

- Risk is increased when prescribed in combination or in high doses.
- Caution must be used when prescribing these medications for elderly patients who are at higher risk of adverse effects, especially in the clinical context of hyperactive delirium and dementia with Behavioural and Psychological Symptoms of Dementia (BPSD). Non-pharmacological strategies of managing these behaviours must be optimised prior to prescription of these medications. If deemed necessary, the approach of “start low and go slow” is recommended
- Given that self-harm and suicide are raised within cohorts of individuals with mental illness, psychotropics may pose an increased risk of overdose for those individuals who have associated risk factors (also noting the therapeutic impact of psychotropics can reduce suicide rates).
- Antipsychotic medications carry the potential risk of a range of adverse effects that require an appropriate monitoring plan including metabolic abnormalities, QT prolongation, and neurological effects (e.g. extrapyramidal symptoms). Use for the treatment of BPSD carries an increased risk of stroke/mortality.
- Stimulants and sedative medication may pose a potential risk of diversion to illicit use.

Medication education (written, verbal or both) is to be provided to the patient and carer/support person prior to commencing new medication or discharge from services.

The Psychiatric Services On Line Information System (PSOLIS) is used to collect mental health clinical information for inpatient and community mental health services across WA. The administration of antipsychotic depots in community health services is recorded in PSOLIS and as such, PSOLIS should be referred to when determining an individual’s medication history.

Clinical Incidents related to medication shall be reported in accordance with the WA Health Clinical Incident Management Policy and the Policy for Mandatory Reporting of Notifiable Incidents to the Chief Psychiatrist.

WACHS

- Sedation Process for Mental Health Patients Flowchart
- Cognitive Impairment Clinical Practice Standard
- MR170.8 Agitation and Arousal PRN Medication Chart
- Sedation for Mental Health Patients Awaiting Royal Flying Doctor Service Transfer from Northern and Remote Regions Guideline

Refer to:

- PCH Oral Conscious Sedation Non Anaesthetic Personnel

2.1 Clozapine

Treatment with clozapine must be under direct supervision of a Consultant Psychiatrist. Clozapine requires strict monitoring in light of its potential to cause neutropenia, agranulocytosis, myocarditis, cardiomyopathy, clozapine induced gastrointestinal hypomobility (CIGH) and other significant adverse effects. Prescribing and dispensing is limited to registered centres and all patients must be part of a clozapine monitoring system, which mandates systematic evaluation of haematological parameters.

Concomitant use of other medications with the potential to cause agranulocytosis is discouraged and increased vigilance should be maintained where this is necessary e.g. carbamazepine should never be used concomitantly with clozapine as this combination has been shown to be synergistic for agranulocytosis.

Plasma clozapine concentrations can increase significantly in patients who stop smoking which may lead to clozapine toxicity. Any change in the patient's smoking status should be documented and clearly communicated to the treating team for review of the clozapine dose. Note: It is the polyaromatichydrocarbons within the tar of cigarettes which affects clozapine metabolism and levels, not the nicotine. Nicotine replacement therapy (NRT) does not affect clozapine levels.

The Clozapine Initiation and Titration Chart MR 170.4 is to be used when commencing treatment and undertaking clozapine titration while patients are in hospital.

Clozapine should ideally be dispensed for individual patient use. Clozapine should generally not be kept on imprest – the decision to include in specific imprest locations must be determined by the regional Drugs and Therapeutics Committee (or equivalent). Where it is kept on imprest (e.g. for after hours access), there should be clear procedures to confirm that clozapine is a current medication for the patient, their dosing regime is confirmed and appropriate haematological monitoring has been completed.

WA Health/General/WACHS

- Medication Chart Policy – MP 0078/18
- WA Health - Mental Health Charts and Clozapine Resources
- ClopineCentral
- WACHS MR 170.4 Clozapine Initiation and Titration Chart

2.2 Lithium

At supratherapeutic concentrations lithium toxicity can cause: ataxia, vomiting, coarse tremor, disorientation, dysarthria, muscle twitches, impaired consciousness, acute renal failure and death. Prolonged toxic concentrations may lead to irreversible brain damage.

Patients should be monitored for signs and symptoms of lithium toxicity, including confusion, unsteadiness, nausea, diarrhoea or worsening tremor.

It is important to monitor thyroid function, urea and electrolytes (in particular, sodium), lithium levels and other relevant biochemistry to ensure toxicity does not eventuate.

WACHS

- Specialised Medication - Lithium (Adult Patients) Guideline

2.3 Zuclopenthixol Acetate

Zuclopenthixol acetate (Clopixol Acuphase®) is an intermediate acting intramuscular injection indicated for managing acute psychosis and mania in adults. It can lead to significant extrapyramidal side effects (EPSE) and drowsiness that persists for a prolong period of time. Additional observations are required for patients as outlined in the guideline.

WACHS

- Zuclopenthixol Acetate (Clopixol Acuphase®) Monitoring Guideline

2.4 Olanzapine

Olanzapine is used for the treatment schizophrenia, psychosis and bipolar disorder. Oral or IM Olanzapine can be used for the short-term management of agitation and arousal.

Available as tablet, orally disintegrating tablet, wafer, Short Acting IM Olanzapine (Zyprexa IM®) or Long Acting Injection (LAI)/Depot Olanzapine Pamoate (Zyprexa Relprevv®).

Caution: LAI/Depot Olanzapine Pamoate (Zyprexa Relprevv®) is not to be confused with Short Acting Intramuscular Olanzapine (Zyprexa IM®).

Adverse effects include sedation, extra pyramidal side effects (EPSE), elevation of liver aminotransferases, metabolic issues (most commonly weight gain), and Post Injection Syndrome (PIS) associated with LAI Olanzapine.

2.4.1 Short Acting Intramuscular Olanzapine (Zyprexa IM®)

Simultaneous administration of parenteral benzodiazepine with short-acting IM olanzapine is contraindicated due to possible cardiorespiratory depression and excessive sedation resulting in a risk of death.

- wait at least 1 hour after IM olanzapine before giving a parenteral benzodiazepine
- carefully consider use of IM olanzapine after using a parenteral benzodiazepine and monitor cardiorespiratory status and sedative effect.

2.4.2 LAI/Depot Olanzapine Pamoate (Zyprexa Relprevv®)

Olanzapine LAI is administered by deep intramuscular gluteal injection only. There is a risk of post injection syndrome (PIS) with every dose of olanzapine depot injection. PIS includes a range of signs and symptoms of sedation and/or delirium (including confusion, anxiety and agitation) consistent with olanzapine overdose. Other symptoms of PIS include dizziness, weakness, altered speech, hypertension and seizures. Patients must be monitored for at least 2 hours after each dose.

Prior to administration the patient must be provided with education regarding the medication, 2-hour post administration monitoring requirement and signs and symptoms of adverse reaction. Patients must be agreeable to refrain from driving or operating heavy machinery for the remainder of the day. Patients must be provided with information regarding accessing emergency services should symptoms of PIS develop following the monitoring period.

Where the 2-hour post administration monitoring period is not possible or agreed to by the patient, Olanzapine LAI is NOT to be given.

2.5 Sodium Valproate

Sodium valproate has a high teratogenic potential and should not be used to treat female children and women of childbearing potential unless there are no other viable treatment options. Children exposed to sodium valproate in utero have a significantly increased risk of congenital malformations and neurodevelopmental disorders. Women with mania are likely to be sexually disinhibited when unwell, increasing the risk of unplanned pregnancy.

Where the use of sodium valproate for children and women of childbearing potential cannot be avoided, the prescriber must ensure:

- The patient is provided with medication information regarding risks associated with pregnancy and the importance of maintaining effective contraception.
- An effective contraceptive plan is in place and the patient agrees to comply, without interruption, for the duration of the sodium valproate treatment.
- The patient undergoes serum pregnancy screening prior to the initiation of treatment.
- The patient is advised of the need to notify the prescriber if they are planning a pregnancy or become pregnant.

- The patient consent to treatment is documented in the medical record.
- The suitability of sodium valproate treatment continuation is reviewed at least annually.

Additional adverse effects include; dizziness, drowsiness, weight gain, increased suicidal ideation, aggravated convulsions, hepatic dysfunction, and pancreatitis. Mental State and physiological symptoms should be monitored regularly especially during the initial 6 months of treatment.

External Resources
- Sanofi – Valproate Guide for Health Professionals
- Sanofi – Valproate Patient Guide: Contraception and Pregnancy when taking Valproate

3 POTASSIUM AND OTHER ELECTROLYTES

3.1 Potassium Salts IV

Potassium is available as chloride, phosphate and acetate salts.

Errors in the preparation and administration of intravenous potassium can be fatal.

Adverse incidents which relate to potassium use include: too rapid administration, selection of the wrong ampoule or product, preparation errors and use of an excessively concentrated solution.

The WACHS Potassium Supplementation Policy must be adhered to and includes specifications on the storage and administration of intravenous potassium.

WA Health
- Mandatory Standard for intravenous potassium

WACHS
- Potassium Supplementation Policy
- Refer to PCH Potassium Chloride – Paediatric

WACHS Regions
- WACHS South West Handling and Supply of Potassium Ampoules Procedure
- WACHS Great Southern Management of Potassium Ampoules Procedure - Albany Health Campus
- WACHS Midwest Supply and Management of Potassium Ampoules Procedure

3.2 Calcium IV

Calcium is available as a calcium chloride or calcium gluconate salt.

Calcium IV is rapidly fatal in overdose.

Too rapid injection can cause peripheral vasodilation, bradycardia, cardiac arrhythmias and cardiac arrest.

Calcium gluconate is a supersaturated solution and precipitation may occur. Vials should not be used if the solution is discoloured, cloudy, turbid or if a precipitate is present. Calcium gluconate for the management of hyperkalaemia can be administered on a ward and should not be delayed.

Solutions are highly irritant and extravasation can cause severe complications.

3.3 Hypertonic Saline IV

Hypertonic saline may be used to treat hyponatremia. Caution is required due to the risk of osmotic demyelination (which may be fatal) if abnormalities in plasma sodium are corrected too rapidly.

Availability of hypertonic sodium chloride ampoules should be restricted to critical care areas, areas where it is determined that there is a clinical need, or pharmacy only. The use of 3% hypertonic saline in a pre-made Viaflex® bag is preferred.

Refer to: Therapeutic Guidelines (TG) – Other Electrolyte Abnormalities (WACHS Library)

3.4 Magnesium IV

Severe hypomagnesaemia may result in respiratory depression, respiratory paralysis, renal failure, coma, cardiac arrhythmias and cardiac arrest. Oral magnesium supplementation is preferred where clinically appropriate.

Magnesium is available as sulfate and chloride salts however most health services will only keep one. Care is required as while dosing is equivalent the concentration is different. Excessive administration can cause nausea, vomiting, hypotension, muscle weakness, muscle paralysis, CNS depression.

Ensure an IV preparation of a calcium salt is available during magnesium infusion to reverse the effects of magnesium toxicity if required.

See also: KEMH Guideline Hypertension in Pregnancy: Magnesium Anticonvulsant Therapy

3.5 Phosphate IV

Phosphate is available as sodium or potassium salts. The sodium salt is preferred unless there is a clinical need for intravenous potassium supplementation. Refer to WACHS Potassium Supplementation Policy for more information.

See “Potassium Salts IV” for additional information around safety of potassium salts.

Excessive IV phosphate may cause hyperphosphataemia. Monitor serum sodium, potassium, phosphate and calcium concentrations and renal function every 12 to 24 hours.

Phosphate administration is contraindicated in patients with severe renal impairment. Rapid injection of sodium dihydrogen phosphate may lead to hypernatraemia and fluid overload.

Potentially fatal hyperkalaemia can develop rapidly and asymptomatically with use of the potassium dihydrogen phosphate and dipotassium hydrogen phosphate salts.

WACHS
- Specialised Medication Guideline – Phosphate
- Specialised Medicine – Potassium Supplementation Policy

4 INSULIN

- Errors involving insulin therapy can cause serious harm or can be fatal.
- Insulins are one of the few exceptions where prescribing in trade/brand name is recommended (instead of generic name) to reduce confusion between insulin products.

WACHS
- Diabetes - Inpatient Management Clinical Practice Standard
- MR157A WACHS Insulin Infusion Order Chart
- MR156A WACHS National Insulin Subcutaneous Order and Blood Glucose Record - Adult Form
- MR156B WACHS Obstetric Subcutaneous Insulin Order and Blood Glucose Record

Refer to:
- PCH Diabetic Ketoacidosis - Assessment and Management
- PCH Diabetes Sick Day Management
- PCH Diabetes Hypoglycaemia Management
- PCH Insulin Pump Management

WACHS Regions
- WACHS South West
  - Adult Diabetic Ketoacidosis (DKA) Guideline
  - MR157D WACHS –SW Adult Diabetic Ketoacidosis (DKA) Treatment & Monitoring Chart

4.1 Insulin by Subcutaneous Injection

4.1.1 Prescribing insulin for subcutaneous injection

Insulin should be prescribed on MR156A WACHS Insulin Subcutaneous Order and Blood Glucose Record – Adult or other regional DTC (or equivalent) endorsed chart. Care must be taken to ensure that the insulin type is fully documented:
- Full trade/brand name (e.g. Humulin 30/70® not just Humulin®, Humalog Mix 50® not just Humalog Mix®)
- Device type/name of device

- Specify the time of administration but also the additional administration requirements such as immediately before meals or a specific time to be given in respect to food
- Dose - ensure that the word '**UNITS**' is written in full to avoid confusion (not required for the MR156A chart as the word units is pre-printed for safety).

Australian Commission on Safety and Quality in Health Care

- Recommendation for Terminology, Abbreviations and Symbols used in Medicines Documentation.

WACHS

- MR157A WACHS Insulin Infusion Order Chart
- MR156A WACHS National Insulin Subcutaneous Order and Blood Glucose Record - Adult Form
- MR156B WACHS Obstetric Subcutaneous Insulin Order and Blood Glucose Record

Kimberley region

- MRK 159 Basal Bolus Insulin
- MRK 158 Blood Glucose Record Form and sliding scale insulin order form

4.1.2 Administering insulin by subcutaneous injection

Ensure insulin is given subcutaneously at the prescribed dose. Self-administration by the patient is ideal, where clinically appropriate.

For subcutaneous insulin administration, a pen device is preferred to drawing up insulin out of a cartridge/vial with a syringe. A safety needle with automatic protective shields should be used. Insulin pens are for individual patient use. Always dispose of the safety needle immediately after use- o not store disposable insulin pens with a needle attached.

If a syringe is required, choose the smallest syringe capable of administering the dose. The smaller the syringe, the easier it is to read the markings and draw up an accurate insulin dose. 1 mL insulin syringes should be available at all times.

WA Health

- WAMSG Strategies to reduce insulin-related medication errors

4.2 Administering insulin by intravenous infusion

Independent double check of the **concentration** and the **infusion rate** against the prescription needs to occur to ensure the correct dose is administered to the patient.

IV insulin can be lethal if given in excessive doses or in place of other medications (insulin and heparin are often mistaken for one another since both are ordered in units).

Problems may arise if pumps are programmed incorrectly.

Insulin infusions should be prescribed on the MR 157A WACHS Insulin Infusion Order Chart.

WACHS

- Diabetes - Inpatient Management Clinical Practice Standard
- MR157A WACHS Insulin Infusion Order Chart

4.3 Storage of insulin

Insulin vials/cartridges/prefilled pens must be for individual patient use only.

Unopened vials /cartridges /prefilled pens should be stored in a fridge (2-8 degrees celsius)

Insulin which is in use can be stored at room temperature (below 25 degrees celsius) for up to 28 days. Cartridges are for single use only unless in a compatible insulin delivery system. Repeated needling of a cartridge bung is not recommended and increases the risk of coring.

When the insulin is used for the first time, ensure a label is used to note the date and time of opening and the patient's details.

Ensure insulin is discarded if it has been out of the fridge for 28 days or more.

Do not place insulin in or close to the freezer compartment as it should not be frozen.

Do not expose vials, cartridges or prefilled pens to sunlight or high temperatures.

Insulin cartridges/prefilled pens which are in use (for individual patient use) should be stored at room temperature. They should not be returned to the fridge and should be discarded on patient discharge or at 28 days whichever is shortest. If stored in the fridge, store separately from unused stock and separate from other patients' medications. Prefilled pens may be prescribed and dispensed to a patient on discharge if clinically appropriate and appropriately labelled as per the WACHS Medication Prescribing and Administration Policy.

4.4 High concentration insulin products

Most insulin concentrations in Australia are 100 units/ 1mL formulation. Three products are available as high concentration formulations to reduce the number of injections or volume of insulin to be administered for insulin resistant patients on high doses of insulin.

These products have 3-5 times the concentration of insulin compared to standard formulations (100 units/mL) and there is a risk of adverse events with prescribing, dispensing and administration of these products.
Currently 3 products exist:

- 300 units / 1mL insulin GLARGINE, trade/brand name Toujeo®
- 500 units / 1mL insulin NEUTRAL, trade/brand name Humulin R-500 Kwikpen® (SAS product)
- 200 units / 1mL insulin LISPRO, trade/brand name Humalog U200®

Prescription orders must include the trade/brand and concentration of the insulin.

Storage of these insulins must be away from clinical area imprests and other formulations of insulin. Regional DTC or equivalent must endorse the addition of a high concentration insulin product to any imprest areas.

Any high concentration insulin pens which are in use must be labelled with the patient's name and stored at the bedside in a locked drawer.

Administer using the insulin device and dual retractable insulin pen needles.

WA Health
- WATAG – Safety alert: High Concentration insulin.

5 NARCOTICS / OPIOIDS; NEUROMUSCULAR BLOCKING AGENTS

5.1 Narcotics / Opioids

Opioids and sedative agents have a high risk of causing harm.

Confusion regarding short and long-acting oral formulations is common, and the relative potencies/conversions between different opiates carry a significant potential for harm.

Prescribers can access additional information about these by contacting a consultant specialist in pain management where available (e.g. Acute Pain Service or anaesthetist).

Refer to: Australian Commission on Safety and Quality in Health Care's Opioid Analgesic Stewardship in Acute Pain Clinical Care Standard.

WA Health
- Medicines Handling Policy – MP139/20

Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine
Acute Pain Management: Scientific Evidence Fifth Edition 2020

WACHS
- Medication Handling and Accountability Policy
- Medication Prescribing and Administration Policy
- Intravenous Opioid Administration Policy
- Epidural / Spinal Analgesia Management Policy
- Subcutaneous Infusions in the Palliative Care Setting via CADD®-Solis Procedure

- Subcutaneous Infusions in the Palliative Care Setting via NIKI T34™ Procedure
- Intrathecal Pain Management in the Palliative Care Setting Procedure
- Regional Analgesia Management (Adult) Procedure ACHS

5.1.1 Prescribing Opioids

Incorrect dosing of opioids can lead to inadequate analgesia, excessive sedation and potentially lethal respiratory depression. Elderly patients and patients with renal or hepatic impairment are particularly at risk. Dosing should follow the "start low and go slow" philosophy.

Care should be taken when switching from one opioid preparation to another.

If slow release preparation is prescribed, ensure the red box "tick if Slow release" is marked on the WA Hospital Medication Chart.

WA Health
- Medicines Handling Policy – MP139/20
- Guidelines for Managing Specific High Risk Medications Relevant to the Organisation
- Department of Health Opioid Conversion Chart

WACHS
- Intravenous Opioid Administration Policy
- Epidural / Spinal Analgesia Management Policy
- MR170.5 WACHS PCIA-IV Opioid Infusion Prescription and Additional Observation Chart
- MR170.3 WACHS Epidural / Spinal Morphine Record
- MR170.2 WACHS Epidural / Spinal Prescription and Additional Observation Chart
- MR170H WACHS Continuous Subcutaneous Infusion Chart
- MR170K WACHS Regional Analgesia Prescription and Additional Observation Record
- MR12 Emergency Department Procedural Sedation Record

WACHS Regions
- WACHS South West Ketamine Infusion (Low Dose Intravenous Analgesia) in the Acute Care Setting Procedure
- WACHS South West MR 113a Ketamine Infusion Analgesia Record

5.1.2 Administering Opioids

The effects of opioids can be increased by other medications, alcohol consumption, increased body temperature or exposure to heat.

Adult patients receiving intramuscular opioids require at a minimum, a pain score, conscious state, respiratory rate and oxygenation monitored and recorded prior to

administration, 30 minutes after dose and thereafter as clinically indicated. Observations should be recorded as per MR140A Adult Observation and Response Chart.

WA Health

- Medicines Handling Policy – MP139/20

WACHS

- Intravenous Opioid Administration Policy
- Epidural / Spinal Analgesia Management Policy
- Intrathecal Pain Management in the Palliative Care Setting Procedure
- Regional Analgesia Management (Adult) Procedure
- Subcutaneous Infusions in the Palliative Care Setting via CADD®-Solis Procedure
- Subcutaneous Infusions in the Palliative Care Setting via NIKI T34™ Procedure
- MR170.6 WACHS PCIA-IV Opioid Infusion Continuation Sheet
- MR170.5 WACHS PCIA-IV Opioid Infusion Prescription and Additional Observation Chart
- MR170.3 WACHS Epidural / Spinal Morphine Record
- MR170.2 WACHS Epidural / Spinal Prescription and Additional Observation Chart
- MR170H WACHS Continuous Subcutaneous Infusion Chart
- MR170H.1 WACHS Subcutaneous Medication Calculation Sheet
- MR170K WACHS Regional Analgesia Prescription and Additional Observation Record
- MR12 Emergency Department Procedural Sedation Record

5.1.2.1 Transdermal Patch Delivery Systems

Fentanyl and buprenorphine analgesic patches require safe storage and disposal. Topical opioid patches have a significantly delayed onset of effect and prolonged duration of effect even after removal of the patch.

It is important to ascertain the presence of any transdermal patches at time of admission, as well as when the patch was applied and requires replacing.

Ensure that the medicated patch has been removed if the prescription order has been ceased.

Fentanyl patches are not recommended in opioid-naïve patients and should be reserved for chronic pain management.

The medication chart should be appropriately annotated to remove the risk of the patch being replaced on the incorrect day. It is preferable to use the patch check sticker on medication charts to document that the patch is in place at each shift handover.

A significant amount of the medicine remains in the patch after its intended application period has expired. Ensure that the previous patch has been removed before applying

a new patch and that used patches are disposed of by folding the patch in half so that the sticky side of the patch sticks to itself and discarding into a secure sharps or medication bin.

5.2 Neuromuscular Blocking Agents (NMBAs)

Neuromuscular blocking agents are considered high risk medications because inadvertent use in patients without the availability of medical staff skilled in airway support can lead to respiratory arrest, permanent harm and death. Serious incidents have occurred involving inadvertent administration of neuromuscular blocking agents to a patient instead of another agent (e.g. sedative).

Examples of neuromuscular blocking agents include:

- suxamethonium
- pancuronium
- vecuronium
- atracurium
- rocuronium
- mivacurium
- cisatracurium

These medications are used during tracheal intubation, during surgery of intubated patients, and to facilitate mechanical ventilation of critically ill patients.

Administration errors involving these medications in Australia and internationally have been associated with look-alike packaging and labelling, and look-alike/sound-alike (LASA) medication names, resulting in selection errors. These risks can be exacerbated when neuromuscular blocking agents are stored with other medications. It is recommended that neuromuscular blocking agents are segregated and sequestered to differentiate all neuromuscular blockers from other medications.

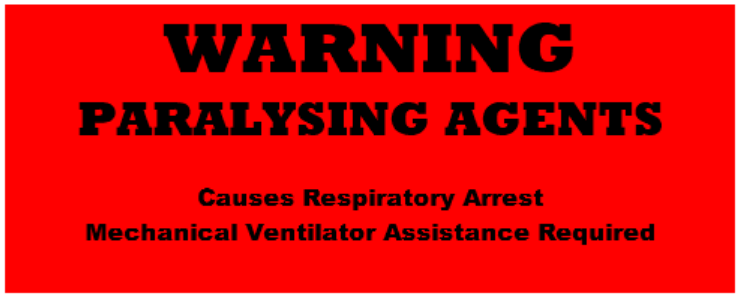
5.2.1 Storage

- Neuromuscular blocking agents must only be stored (imprested) in areas of the hospital/health service that routinely use these medications (e.g. not imprested on general wards, unless where required to be kept as part of the Emergency Telehealth Services (ETS) list of medicines and there are no other suitable imprest locations).
- Approved imprest locations must be determined by the regional Drugs and Therapeutics Committee (in consultation with clinicians who prescribe neuromuscular blocking agents and pharmacy).
- The storage location of all neuromuscular blocking agents should be reviewed on a regular basis (this includes approved imprest locations including theatre, and medication trolleys).
- In those areas permitted to store neuromuscular blocking agents (i.e. approved imprest locations), these must be stored in a clearly marked (see image of alert below) and sealed container (container with lid). The container acts to segregate/separate neuromuscular blocking agents from non-neuromuscular blocking agents medicines and acts as a physical and visual prompt to reduce the chance of unintentional selection (i.e. see alert and open lid if intending to use an neuromuscular blocking agents).

- Neuromuscular blocking agents may be stored in the same container. It may be ideal to store all neuromuscular blocking agents together for ease of access (e.g. rather than some in the refrigerator and some on the shelf). Vecuronium is stored at room temperature but some brands may be stored in the refrigerator. Consult with the regional pharmacy department regarding storage in approved imprest locations.
- Where the imprested quantity of neuromuscular blocking agents is large (e.g. in theatres) and a lidded container is not practical, a dedicated cupboard may be considered (consult with regional pharmacy department).
- Where neuromuscular blocking agents are stored in standardised anaesthetic trolley drawer compartments, the individual compartments can be considered a sealed container.
- Where neuromuscular blocking agents are stored in other medication trolleys such as resuscitation trolleys, and these do not have individual compartments to separate neuromuscular blocking agents from other medicines, the requirement for a clearly marked and sealed container applies (to segregate/separate from other medicines).

- Consider segregating/separating neuromuscular blocking agents from other medications in the pharmacy by placing them in lidded containers or other isolated/dedicated storage area.

Lidded containers for neuromuscular blocking agents need the following alert:



The same alert should be used for standardised anaesthetic trolley drawer compartments containing neuromuscular blocking agents and resuscitation trolley drawers containing neuromuscular blocking agents.

5.2.2 Prescribing

- Outside the operating theatre or procedural areas, orders for neuromuscular blocking agents should only be part of an intubation protocol to maintain a specific level of paralysis while the patient is mechanically ventilated.
- Prescribing of neuromuscular blocking agents should be restricted to clinicians who have adequate knowledge and training, and in line with the Statewide Medicines Formulary.

5.2.3 Preparation and administration

- These medications should only be administered by staff with experience in maintaining an adequate airway and respiratory support, and only in units where intubation and respiratory support can be provided (this includes ETS sites).

- Administer all neuromuscular blocking agent infusions via a programmable pump that ideally utilises Drug Error Reduction Software (DERS).
- Proper labelling of all syringes containing neuromuscular blocking agents must comply with the National Standards for User-applied Labelling of Injectable Medicines, Fluids and Lines.
- Ensure all appropriate reversal agents for neuromuscular blockade are available to qualified staff.

WA Health
- Guideline for Managing Specific High Risk Medications Relevant to the Organisation

General
- Institute for Safe Medication Practices Targeted Medication Safety Best Practices for Hospitals 2022-2023

6 CHEMOTHERAPEUTICS/CYTOTOXIC AGENTS

All cytotoxic agents are considered high risk medications.

Cytotoxic agents may be used for indications relating to cancer and non-cancer indications, e.g. rheumatoid arthritis.

All preparations of cytotoxic agents (including oral preparations) should be clearly identified as cytotoxic to all staff that may handle the medication. A cytotoxic warning label should be used for these agents.

All cytotoxic and targeted therapy should be prescribed on the basis of a documented, referenced protocol and a treatment plan documented for all patients. A start and stop date must be included for intermittent therapy and all chemotherapeutics must be clinically verified by a pharmacist prior to dispensing.

Dose adjustments should be clearly documented in the Treatment Plan or patient's healthcare record and duplicated on the order and/or prescription.

Appropriate Personal Protective Equipment (PPE) should be utilised by staff handling chemotherapeutic agents.

Patients receiving chemotherapy for the treatment of cancer via an oncology service should routinely have their chemotherapy administered in designated chemotherapy units by chemotherapy competent staff. Treatment must be prescribed as per the WACHS Anticancer Therapy Prescribing Procedure.

WA Health/General
- Guidelines for the Safe Prescribing, dispensing and administration of systemic cancer chemotherapy. Clinical Oncologist Society of Australia. 2018
- WA Health Code of practice for clinical and related waste management

WACHS

- Anticancer Therapy Prescribing Procedure.
- Chemotherapy Administration Clinical Practice Standard
- Cancer Treatments Online – eviQ – EUCP Policy: A point of care clinical information resource that provides health professionals with current evidence based, peer reviewed, best practice cancer treatment protocols and information.

6.1 Vinca alkaloids

Vinca alkaloids are a class of chemotherapeutic agents which includes vinblastine, vincristine, vinflunine and vinorelbine. Vinca alkaloids can be fatal if given by the intrathecal route. All vinca alkaloids are to be supplied to WACHS hospitals in 50mL minibags. All vinca alkaloids must be labelled clearly with the warning: 'FOR INTRAVENOUS USE ONLY – FATAL IF ADMINISTERED BY ANY OTHER ROUTE'.

All sites must adhere to the WA Health Mandatory Standard for vinca alkaloids.

Australian Commission on Safety and Quality in Health Care

- Vincristine – Medication Alert – Vincristine can be fatal if administered by the intrathecal route
- National Standard for User-applied Labelling of Injectable Medicines Fluids and Lines

WA Health

- Mandatory Standard for vinca alkaloids

6.2 Methotrexate

Australian cases with fatal consequences have been reported when oral methotrexate has been prescribed and administered more frequently than **once weekly** for autoimmune or inflammatory disorders.

Ensure when prescribing, administering and dispensing weekly doses of methotrexate that it is clearly stated **dose and which day of the week** the methotrexate is to be administered on the WA Hospital Medication Chart, and that the remainder of the unrequired administration boxes have been crossed out to prevent unintended administration.
Concurrent folic acid administration is recommended to reduce mucositis; this has the potential to be omitted or erroneously prescribed on the same day of methotrexate administration. Clinical interactions should always be considered in patients who are prescribed methotrexate.

In addition to a clear and unambiguous medication chart order, the following will reduce the risk of administration error:

- Medication reconciliation to confirm that methotrexate is a current medication for the patient, the current dose and day of administration, and information about the date of the last dose
- Oral methotrexate should generally not be kept on imprest – the decision to include in specific imprest locations must be determined by the regional Drugs and Therapeutics Committee (or equivalent)
- Ideally, supply the exact number of tablets for the required dose once the dose and day of dosing has been verified (via medication reconciliation) and supply should ideally occur as close to the day of dosing as practicable. Where more than one dose is supplied at a time, store away from medicines for other patients. All supplies should be returned to pharmacy when no longer needed.
- Where relevant, supply at most 4 weeks or one month supply on discharge.

General
- Medication Safety Update – Misadventures in oral methotrexate dosing
- Institute for Safety Medication Practices – Call to action: Longstanding Strategies to Prevent Accidental Daily Methotrexate Dosing Must Be Implemented

6.3 Etoposide

Etoposide is available as the base etoposide (ie. Vepesid®) and as etoposide phosphate (Etopophos®). They contain different amounts of etoposide and cannot be directly substituted. Confusion may result when prescribing or administering the medication and this can result in under or over-dosing of the medication. Etoposide phosphate is the preferred injectable formulation of etoposide in WACHS however base etoposide may be required if approved by a clinical pharmacist.

7 HEPARIN/ANTICOAGULANTS

There is potential for excessive bleeding with warfarin, heparin and other anticoagulants. The incorrect dose or failure to monitor therapy can contribute to these events. Conversely, inadequate treatment can precipitate poor clinical outcomes.

All anticoagulants should be prescribed on the WA Anticoagulation Chart.

WA Health
- Medication Chart Policy – MP0078/18

WACHS
- MR170C Anticoagulant Medication Chart

7.1 Warfarin

Warfarin interacts with a range of medications which can result in changes in International Normalised Ratio (INR) stability and alter the patient's bleeding risk. Doses of warfarin may require adjustment due to these interactions.

Regular monitoring of INR is required, and patients should be educated on recognising signs of bleeding.

Warfarin is available as Coumadin® and Marevan®. Due to warfarin's narrow therapeutic window, the two brands are not interchangeable. Marevan® is the preferred brand in WA Health and Coumadin® should not be available in clinical area imprests unless approved by the regional DTC or equivalent.

WA Health

- Living with warfarin – Information for patients

7.2 Heparin

Heparins can be sub-classified as unfractionated heparin (UFH) and low molecular weight heparins (LMWH) such as enoxaparin, danaparoid and dalteparin.

Unfractionated heparins are available as multiple strengths. Individual regions should review their holdings of heparin to minimise look-alike products.

Refer to: AMH, SHPA Australian Injectable Drugs Handbook

7.2.1 Prescribing unfractionated heparin/danaparoid/dalteparin

Ensure that the word '**UNITS**' is written in full to avoid confusion.

7.2.2 Monitoring heparins

The activated partial thromboplastin time (aPTT) has been used most widely for monitoring of therapeutic doses of UFH. Standardisation between laboratories in the control of heparin therapy using the aPTT has not been achieved across all hospitals because of the considerable variation observed between reagents and instruments used to measure the aPTT. Therefore, reference ranges calibrated to the facility's pathology provider should be used – hospitals should ensure that the Anticoagulation Chart in use is specific to that facility in this respect.

It is recommended that platelet counts are monitored every two days when prescribing heparin therapy. Heparins can cause thrombocytopenia which does not appear to be dose-related.

A baseline renal function test and full blood count should be done before commencing a LMWH. Dosing is weight based and must be modified in patients with renal insufficiency (creatinine clearance ≤ 30mL/minute).

7.3 Direct-action Oral Anticoagulants (DOACs)

Direct oral anticoagulants include: rivaroxaban, dabigatran and apixaban and were previously called New/Novel Oral Anticoagulants (NOACs).

Apixaban and rivaroxaban currently have no specific reversal agent widely available for use. Idarucizumab is the commercially available reversal agent for dabigatran.

Care is required when selecting patients for newer anticoagulant treatment:

1) Dosing recommendations for each agent vary depending on the patient age, indication and degree of renal function, resulting in the potential for under or over anticoagulation if dosed inappropriately.
2) Use with caution in the elderly (> 75 years) and patients with low body weight (< 50 kg).
3) Check for medication interactions.

WA Health/General
- WA Health Living with a direct-acting oral anticoagulant (DOAC)
- CEC NOAC Guidelines

7.4 Thrombolytics

Thrombolytics are utilised in the acute treatment of pulmonary embolism, stroke and acute coronary syndrome. Timing of thrombolytic use affects potential benefit.

Use of thrombolytics carries a high risk of bleeding events.

Refer to: Therapeutic Guidelines (based on indication).

WA Health
- Protocol for Intravenous Thrombolysis in Acute Ischaemic Stroke

Australian Commission on Safety and Quality in Health Care
- Coronary Syndromes Clinical Care Standard

WACHS
- Cardiac Thrombolysis Pack Contents for Emergency Departments and Services
- MR1B WACHS Chest Pain Pathway (Emergency Chest Pain Kit)
- Acute Stroke Clinical Standards and Guidelines - EUCP Policy
- MR172 WACHS Tenecteplase Kit/ MR172A WACHS Tenecteplase Checklist

WACHS Regions
- GS – MR 1d Thrombolysis Protocol & Checklist – Acute Ischaemic Stroke

8 SAFER SYSTEMS

Standardisation of processes and systems is designed to facilitate safe medication use.

WA Health/General
- CATAG Guiding Principles for the quality use of off-label medicines
- Medication Chart Policy – MP 0078/18
- Medication Review Policy – MP 0104/19

- Australian Commission on Safety and Quality in Healthcare Recommendations for terminology, abbreviations and symbols used in medicines documentation, December 2016
- National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines
- WA Health information about the National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines
- Guidelines for Managing Specific High Risk Medications Relevant to the Organisation

WACHS
- Medication Prescribing and Administration Policy
- Medication Handling and Accountability Policy

8.1 High Risk Populations

It is recognised that certain patient populations are also deemed as high risk. These include geriatric patients, obese patients, low-weight patients, patients with renal or hepatic impairment and patients managing more than five (5) regular medications (polypharmacy).

Patients may also be considered high risk due to difficulty managing medicines because of literacy, language difficulties, dexterity problems, impaired vision or other cognitive difficulties.

Refer to the MP 0104/19 Medication Review Policy.

8.2 Look alike, sound alike (LASA) names

Issues arise when products have names that look alike, sound alike or packaging that looks alike.

Examples include:
- some heparin 5 mL plastic ampoules and heparinised saline 5 mL plastic ampoules
- the brands Celapram® and Celebrex®. Celepram® is citalopram (antidepressant) while Celebrex® is celecoxib (an anti-inflammatory).

LASA products can cause problems for patients on multiple medications when brands are altered during their stay within the hospital system.

The Therapeutic Goods Administration (TGA) is currently reviewing its requirements around labelling and packaging of medications for the Australian market in the view of reducing the risks with LASA products.

All sites should be mindful of LASA products and take steps to reduce the risk associated with these agents, either via separation of products, additional labelling or changing the products held.

8.3 Alternative salts

Medications may be available as multiple salts of the same product. These salts may affect the equivalence of the products therefore requiring adjustments in strength or dose.

Examples include phenytoin and perindopril.

Clinical staff should refer to standard references for information on the equivalence of these products.

8.4 Off-label use of medicines

Products are registered for use in TGA for specific indications.

The principles developed by Council of Australian Therapeutic Advisory Groups (CATAG) should be followed when considering the use of a medicine in an off-label manner including all relevant patient consent (see Guiding Principle 3 in CATAG document).

1. **Only consider off-label use of a medicine when all other options, including the use of** medicines approved by the TGA, are unavailable, exhausted, not tolerated or unsuitable for individual patients.
2. Use high quality evidence to determine appropriateness of off-label medicine use.
3. Involve the patient/carer in shared decision making when recommending the use of an off-label medicine.
4. Consultation with the Drug and Therapeutics Committee should occur when prescribing an off-label medicine that is not included on the Statewide Medicines Formulary. An Individual Patient Approval application process is required for all non-formulary medications.
5. Ensure appropriate information is available at all steps of the medicines management cycle.
6. Monitor outcomes, effectiveness and adverse events.

Prescribers must also be aware of the effect of prescribing off-label medications on the ongoing availability of the product for patients. For example, lack of PBS subsidy on restricted items and / or authority prescriptions.

8.5 Intrathecal Medications

The administration of medications via the intrathecal route is considered an advanced practice skill to be undertaken by Nurses, Midwives and Medical Officers working within their scope of practice appropriate to their level of training and responsibility.

8.6 Epidural Therapy

Administration of medications via the epidural route is considered an advanced practice skill to be undertaken only by a WACHS certified competent RN or midwife.

8.7 Safe Administration of Enteral (Oral) and Nebuliser Liquid Preparations

There is an identified risk of serious “wrong route” medication errors resulting from accidental parenteral administration of solutions intended for an oral, enteral or nebuliser delivery and incidents have been reported nationally and internationally. Preparations intended for oral, enteral or inhaled administration which have been drawn up into parenteral luer-lock syringes and inadequately labelled have resulted in clinical incidents, specifically errors of administration via the wrong route.

Administration of medications intended for oral, enteral or inhalation by the parenteral route results in a rapid absorption of the therapeutic agent into the blood stream. This can lead to a heightened risk of catastrophic outcomes which are often difficult to reverse.

8.7.1 Enteral (oral) solutions

- Enteral (oral) syringes must be available in all clinical areas. Store these away from parenteral (luer) syringes. Enteral (oral) syringes which meet the requirements of the WA Health policy are purple ENFit® syringes (available from Stores/Supply via the Enteral Feeding Systems, Infant Feeding Systems and Consumables Contract (HSS101417)).
    - Enteral administration sets should be clearly labelled “For Enteral Use Only”.
- ‘For Enteral Use Only’ labels must be applied as per National Standard for User Applied Labelling of Injectable Medicines, Fluids and Lines.

Where patients are provided enteral (oral) medicines on discharge or as an outpatient, they should be given enteral (oral) syringes also.

8.7.2 Solutions for inhalation (nebulisation)

- Single-use nebules are to be purchased wherever possible to avoid the need to draw solutions into a syringe prior to administration.
- Where stock solutions must be used, doses should be drawn up into a non-luer syringe (oral/enteral syringe) using a compatible non-luer straw and expelled into the inhalation nebuliser pots.
- Where a nebuliser solution must be measured from an ampoule, the dose needs to be measure using a Nutrisafe 2 connection with needle attached to the non-luer syringe.
- If a medication is to be drawn up into a syringe, the syringe used must be labelled with the intended route of administration – “For Inhalation Use Only”.
- ‘For Inhalation Use Only’ labels must be applied as per National Standard for User Applied Labelling of Injectable Medicines, Fluids and Lines.

8.8 User-applied labelling of injectable medicines, fluids and lines

Refer to:

- National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines
- WA Health information about the National Standard for User-applied Labelling of Injectable Medicines, Fluids and Lines

9 SCHEDULE 4 RESTRICTED MEDICATIONS

Schedule 4 Restricted Medications are a range of Schedule 4 medications that are liable to abuse/diversion. Additional controls around storage and record keeping are required within the public hospital system.

WA Health
- Medicines Handling Policy – MP 139/20

WACHS
- Medication Handling and Accountability Policy

WACHS Regions
- WACHS South West
  - Handling and Storage of Patient's Own Medications – including Schedule 4 Restricted and Schedule 8 Medications Procedure
  - Handling and completion of entries in Schedule 4 Restricted and Schedule 8 Registers and Requisitions Books Information Sheet

10 PHENYTOIN

Administration of intravenous phenytoin carries the risk of significant cardio-pulmonary adverse effects and requires specific monitoring. Many of these adverse effects are related to infusion rate.

Enteral feeds can reduce the absorption of oral phenytoin and feeds may need to be altered to ensure adequate absorption.

Caution is required when changing from one phenytoin product to another as they may not contain equivalent amounts of phenytoin.

Dose changes need to be made carefully as a small change in dose can result in a large change in phenytoin concentration. This is due to the saturation of hepatic metabolism.

Therapeutic drug monitoring is recommended when changing product and dose. Measurement of free phenytoin levels and total phenytoin levels are recommended due to the binding of phenytoin to albumin.

WACHS
- Specialised Medication – Phenytoin (Injectable) for Adult Patients Guideline

Refer to:
- PCH: Phenytoin – Paediatric

11 MONOCLONAL ANTIBODIES

Monoclonal antibodies are utilised for both cancer chemotherapy and non-cancer treatments. When utilised as part of a chemotherapy regimen, treatment should be prescribed on the basis of a documented, referenced protocol and a treatment plan documented as per Section 6 Chemotherapeutics / Cytotoxic Agents.

When utilised as therapeutic infusions for other indications such as for rheumatological, gastrointestinal or neurological indications, preparation may occur at a ward level with suitable Personal Protective Equipment and handling.

General

- WCMICS Australian consensus guidelines for the safe handling of monoclonal antibodies for cancer treatment by healthcare personnel

WACHS

- Safe Handling and Administration of Monoclonal Antibodies Guideline
- Specialised Medication – Abatacept for ADULT Patients Guideline
- Specialised Medication – Abatacept Pre-Infusion Checklist MR173E
- Specialised Medication – Infliximab Guideline
- Specialised Medication – Infliximab Pre-Infusion Checklist MR173A
- Specialised Medication – Natalizumab Guideline
- Specialised Medication – Natalizumab Pre-Infusion Checklist MR173B
- Specialised Medication – Rituximab Guideline for ADULT patients
- Specialised Medication – Rituximab Pre-Infusion Checklist MR173D
- Specialised Medication – Tocilizumab Guideline
- Specialised Medication – Tocilizumab Pre-Infusion Checklist MR137F

12 VOLUNTARY ASSISTED DYING SUBSTANCE

The Voluntary Assisted Dying (VAD) Substances are medications that eligible person to legally access medication that will cause their death. The substance is available as an oral medication for self- or practitioner administration or an IV substance for practitioner administration.

The *Voluntary Assisted Dying Act 2019* outlines the specific people able to prescribe, dispense, supply and dispose of the substance and more detail guidance is covered in the WACHS VAD Policy.

WA Health

- Voluntary assisted dying (health.wa.gov.au)

WACHS

- Voluntary Assisted Dying Policy