High Risk Medications Procedure

1. Guiding Principles

High risk medicines are medicines that have an increased risk of causing significant patient harm of 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 DoH MP 0131/20 High Risk Medication Policy.

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 oral syringes)

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

- Schedule 4 Restricted Medications
- Phenytoin
- Monoclonal Antibodies.

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.

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

WA HMC	Standardised WA Hospital Medication Chart as defined in the Medication Chart Policy MP 00788/18

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. Evaluation

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 CIMS data relevant to high risk medications to the WACHS Medication Safety Committee.
- WACHS Medication Safety Committee to refer any trends in CIMS 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: 1.3, 1.7, 1.27

Medication Safety Standard: 4.15

9. Legislation

Nil

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.

11. Related Forms

MR113a WACHS South-West Ketamine Infusion Analgesia Record

MR1B WACHS Emergency Chest Pain Kit

MR1d WACHS – Great Southern Thrombolysis Protocol & Checklist – Acute Ischaemic Stroke

MR12 WACHS Emergency Department Procedural Sedation Record

MR156A WACHS National Insulin Subcutaneous Order and Blood Glucose Record - Adult Form

MR156B 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 Intrathecal 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

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
WACHS MR172 WACHS Tenecteplase Kit
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
MRK 159 Basal Bolus Insulin (WACHS-Kimberley)
MRK 158 Blood Glucose Record Form and sliding scale insulin order form (WACHS-Kimberley)

12. Related Policy Documents

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 ANZCA Acute Pain Management: Scientific Evidence – EUCP Policy
WACHS Cardiac Thrombolysis Pack Information Sheet
WACHS Cancer Institute NSW - Standard Cancer Treatments - eviQ - EUCP Policy
WACHS Chemotherapy Administration Clinical Practice Standard
WACHS Cognitive Impairment Clinical Practice Standard
WACHS Continuous Subcutaneous Infusions in the Palliative Care Setting Policy
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 Ordering, Storage and Recording of Restricted Schedule 4 Medicines Policy
WACHS Oxygen Therapy and Respiratory Devices - Adults Clinical Practice Standard

WACHS Regional Analgesia Management (Adult) Procedure
WACHS Safe Use of Medication Refrigerator Procedure
WACHS Sedation for Mental Health Patients Awaiting Aeromedical Transfer Guideline
WACHS Sedation Process for Mental Health Patients Flowchart
WACHS South West Adult Diabetic Ketoacidosis (DKA) Guideline
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 South West Patient's Own S4R and S8 Medication Security Bags Procedure
WACHS South West Schedule 4 Restricted (S4R) and Schedule 8 (S8) Registers and Requisition Books Information Sheet
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 Zuclopenthixol Acetate (Clopixol Acuphase®) Monitoring Guideline

13. Related WA Health System Policies

MP 0131/20 High Risk Medication Policy
MP 0078/18 Medication Chart Policy
MP 139/20 Medicines Handling Policy
Guidelines for Managing Specific High Risk Medications Relevant to the Organisation

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:	Medical Services	**EDRMS Record #**	ED-CO-15-20291
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Appendix A: High Risk Medications List

TABLE OF CONTENTS

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 anti-infectives above the Therapeutic Guidelines: Antibiotic or develop and progress local procedures as necessary.

All antibiotic 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 Minimize 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 antibiotics at the direction of the regional Antimicrobial Stewardship Programs and as per the WACHS Antimicrobial Stewardship Policy

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

WACHS

- 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
- WACHS Antimicrobial Stewardship Policy

Australian Commission on Safety and Quality in Health Care

- Antimicrobial Stewardship Clinical Care Standard

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 48hrs (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 overdosing and potential associated toxicity.

Prescribing using both generic and proprietary name is recommended.

1.3 Nebulised antibiotics and antifungals

Antibiotics and antifungals are to be administered via a filtered nebuliser system to prevent aerolisation of the drug into the environment and subsequent exposure of staff and other patients to the drug. 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.

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 failures 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 receive trough levels 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 comes about 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 infusion ceased and later restarted at a slower rate. Careful consideration should be made as to whether the patients should be recorded as having an adverse drug reaction or allergy as this has clinical implications for future antibiotic options.

WACHS

- WACHS Specialised Medication – Intravenous Vancomycin in Adults Guideline

1.6 Other

Other anti-infectives 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 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 Behavioural and Psychological Symptoms of Dementia (BPSD) carries an increased risk of stroke/mortality.
- Stimulants and sedative medication may pose a potential risk of diversion to illicit use.

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.

WACHS

- WACHS Sedation Process for Mental Health Patients Flowchart
- PCH Oral Conscious Sedation Non Anaesthetic Personnel
- Cognitive Impairment - WACHS Clinical Practice Standard
- MR170.8 Agitation and Arousal PRN Medication Chart

WACHS Regions

- WACHS Sedation for Mental Health Patients Awaiting Royal Flying Doctor Service Transfer from Northern and Remote Regions Guideline

2.1 Clozapine

Clozapine requires strict monitoring in light of its potential to cause neutropenia, agranulocytosis, myocarditis, cardiomyopathy 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.

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.

General / Department of Health

- Mandatory policy 0078/18 – Medication Chart Policy
- ClopineConnect
- 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
- 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
- WACHS Zuclopenthixol Acetate (Clopixol Acuphase®) Monitoring Guideline

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
- WACHS – Specialised Medicine – Potassium Supplementation Policy
- 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 Hospital
- WACHS Midwest Supply and Management of Potassium Ampoules Procedure Midwest

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 a small number of critical care areas 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 Guideline 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

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

4. INSULIN

- Errors in insulin therapy can cause serious harm or can be fatal.
- Insulin must be prescribed using the full trade name of the product (ie. Toujeo, Humalog Mix 50, Humulin R, Humulin 30/70)

WACHS

- WACHS Diabetes - Inpatient Management Clinical Practice Standard
- WACHS MR157A WACHS Insulin Infusion Order Chart
- WACHS MR156A WACHS National Insulin Subcutaneous Order and Blood Glucose Record - Adult Form
- WACHS MR156B Obstetric Subcutaneous Insulin Order and Blood Glucose Record
- WACHS Safe Use of Medication Refrigerator Procedure
- PCH Diabetic Ketoacidosis - Assessment and Management
- PCH Diabetes Sick Day Management
- PCH Diabetes Hypoglycaemia Management
- PCH Insulin Pump Management

WACHS Regions

- WACHS South West
  - WACHS – SW 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 name (e.g. Humulin 30/70 not just Humulin, Humalog Mix 50 not just Humalog Mix)

- Device (vial/cartridge/disposable pen)
- 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.

General / Department of Health

- Australian Commission on Safety and Quality in Health Care – Recommendation for Terminology, Abbreviations and Symbols used in Medicines Documentation.

WACHS

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

Medication errors (prescribing, dispensing and administering) may occur because of sound-a-like brand names (e.g. Humalog and Humulin, Novorapid and Novomix), complicated generic names and the multiple types of insulins that are available.

See Section 8.2 Look alike, sound alike (LASA) names.

4.1.2 Administering insulin by subcutaneous injection

Ensure insulin is given subcutaneously at the prescribed dose.

For subcutaneous insulin administration, a pen device is preferred to drawing up insulin out of a cartridge with a syringe. A safety needle with automatic protective shields should be used. Insulin pens are for individual patient useAlways dispose of the safety needle immediately after use: do 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. 1mL insulin syringes should be available at all times.

Department of 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

- WACHS Diabetes - Inpatient Management Clinical Practice Standard
- WACHS 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 C)

Insulin in use can be stored at room temperature (below 25 Degrees C) for up to 28 days. Cartridges are for single use only unless in a compatible insulin delivery system. Repeated needling of a cartridge bungs 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 pre filled pens to sunlight or high temperatures.

Do not use insulin if it has expired (always check the pack for the expiry date).

In use insulin cartridges / prefilled pens (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. 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 unit / 1ml formulation. Two products are now available has high concentration formulations to reduce number of injections for insulin resistant patients on high doses of insulin.

These products have 3-5 times the concentration of insulin compared to standard formulations and there is a risk of adverse events with prescribing, dispensing and administration of these products.

Currently 3 products exist

- 300 unit / 1ml insulin GLARGINE, trade name Toujeo®
- 500 unit / 1mL insulin NEUTRAL, trade name Humylin R-500 Kwickpen® (SAS product)
- 200 unit / 1mL insulin LISPRO, trade name Humalog U200®

Prescription orders must include the 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 an imprest.

The product must be labelled with the patient name and stored at the bedside of the patient in a locked draw.

Administer using the insulin device and dual retractable insulin pen needles. Patients should self-administer insulin dose, whenever possible.

Department of Health

- WATAG – Safety alert: High Concentration insulin.

5. NARCOTICS / OPIOIDS; NEUROMUSCULAR BLOCKING AGENTS

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.)

General / Department of Health

MP 139/20 Medicines Handling Policy

WACHS

- WACHS Medication Prescribing and Administration Policy

- WACHS Intravenous Opioid Administration Policy
- WACHS Epidural / Spinal Analgesia Management Policy
- WACHS Continuous Subcutaneous Infusions in the Palliative Care Setting Policy
- WACHS Intrathecal Pain Management in the Palliative Care Setting Procedure
- WACHS Regional Analgesia Management (Adult) Procedure _WACHS ANZCA Acute Pain Management: Scientific Evidence – EUCP Policy

5.1 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 Hospital Medication Chart / NIMC.

General / Department of Health

MP 139/20 Medicines Handling Policy

- Guidelines for Managing Specific High Risk Medications Relevant to the Organisation

- Department of Health Opioid Conversion Chart

WACHS

- WACHS Intravenous Opioid Administration Policy
- WACHS Epidural / Spinal Analgesia Management Policy
- MR170.5 WACHS PCIA-IV Opioid Infusion Prescription and Additional Observation Chart
- MR170.3 WACHS Intrathecal Morphine Record
- Epidural / Spinal Prescription and Additional Observation Chart MR 170.2
- MR170H WACHS Continuous Subcutaneous Infusion Chart
- MR170K WACHS Regional Analgesia Prescription and Additional Observation Record
- WACHS MR12 Emergency Department Procedural Sedation Record

WACHS Regions

- WACHS South West
  - Ketamine Infusion Record MR113a

Ketamine Infusion (Low Dose Intravenous Analgesia) in the Acute Care Setting Procedure

5.2 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.

General / Department of Health
- MP 139/20 Medicines Handling Policy

WACHS
- WACHS Intravenous Opioid Administration Policy
- WACHS Epidural / Spinal Analgesia Management Policy
- WACHS Continuous Subcutaneous Infusions in the Palliative Care Setting Policy
- WACHS Intrathecal Pain Management in the Palliative Care Setting Procedure
- WACHS Regional Analgesia Management (Adult) Procedure
- WACHS MR170.6 WACHS PCIA-IV Opioid Infusion Continuation Sheet
- MR170.5 WACHS PCIA-IV Opioid Infusion Prescription and Additional Observation Chart
- MR170.3 WACHS Intrathecal Morphine Record
- Epidural / Spinal Prescription and Additional Observation Chart MR 170.2
- MR170H WACHS Continuous Subcutaneous Infusion Chart
- MR170K WACHS Regional Analgesia Prescription and Additional Observation Record
- WACHS MR12 Emergency Department Procedural Sedation Record

5.2.1 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 drug 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.

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 Integrated Progress Notes 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.

General / Department of Health

- Guidelines for the Safe Prescribing, dispensing and administration of systemic cancer chemotherapy. Clinical Oncologist Society of Australia. 2018
- OD 0651/16 Clinical and Related Waste Management Policy

WACHS

- WACHS Anticancer Therapy Prescribing Procedure.
- Chemotherapy Administration - WACHS Clinical Practice Standard
- WACHS endorsed - eviQ Cancer Treatments Online: 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.

General / Department of Health

- 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 National Inpatient 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 on methotrexate.

General / Department of Health

- 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 drug 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 drug 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.

General / Department of Health
- MP 0078/18 Medication Chart Policy

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 areas unless approved by the regional DTC or equivalent.

General / Department of Health
- Living with Warfarin Patient Counselling Booklet

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

General / Department of Health

- WAMSG Living with a Non-Vitamin K Antagonist Oral Anticoagulant (NOAC)
- CEC NOAC Guidelines

7.4 Thrombolytics

Thrombolytics are utilised in the acute treatment of pulmonary embolis, 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)

WACHS

- Cardiac Thrombolysis Pack Information Sheet
- MR1B WACHS Emergency Chest Pain Kit
- Acute Stroke Clinical Standards and Guidelines - EUCP Policy
- MR172 WACHS Tenecteplase Kit

WACHS – Region

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

8. SAFER SYSTEMS

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

General / Department of Health

- CATAG Guiding Principles for the quality use of off-label medicines
- MP 0078/18 Medication Chart Policy
- Australian Commission on Safety and Quality in Healthcare Recommendations for terminology, abbreviations and symbols used in medicines documentation, December 2016
- Guidelines for Managing Specific High Risk Medications Relevant to the Organisation

WACHS

- WACHS Medication Prescribing and Administration Policy
- WACHS 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

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 5mL plastic ampoules and heparinised saline 5mL 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.

9. SCHEDULE 4 RESTRICTED MEDICATIONS

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

General / Department of Health MP 139/20 Medicines Handling Policy
WACHS • Ordering, Storage and Recording of Restricted Schedule 4 Medicines Policy
WACHS Regions • WACHS South West – Patient's Own S4R and S8 Medication Security Bags Procedure – Schedule 4 Restricted (S4R) and Schedule 8 (S8) Registers and Requisition 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.

General / Department of Health
• PCH: Phenytoin – Paediatric
WACHS
• Specialised Medication – Phenytoin (Injectable) for Adult Patients Guideline

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 / Department of Health
• 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 Guideline** • Specialised Medication - **Abatacept Pre-Infusion Checklist MR173**E • Specialised Medication - **Infliximab Guideline** • Specialised Medication - **Infliximab Pre-Infusion Checklist MR173**A • Specialised Medication - **Natalizumab Guideline** • Specialised Medication - **Natalizumab Pre-Infusion Checklist MR173B** • Specialised Medication - **Rituximab Guideline** • Specialised Medication - **Rituximab Pre-Infusion Checklist MR173D** • Specialised Medication - **Tocilizumab Guideline** • Specialised Medication - **Tocilizumab Pre-Infusion Checklist MR137F**