Parenteral Infusion Pump Systems and Dose Error Reduction Software Policy

1. Purpose

Parenteral Infusion Pump Systems (PIPS) are infusion devices capable of reducing the likelihood of parenteral medication administration errors. These devices can be centrally programmed with medication protocol libraries using Dose Error Reduction Software (DERS). DERS allows trained users to leverage a best practice dataset of parenteral fluid and medication dosing and delivery guidelines for patient-specific care areas.

There are different DERS applications used across the WA Country Health Service (WACHS) depending on the clinical situation and the device in use:

- DoseGuard™ is used with the B. Braun Space® family of devices
- PharmGuard™ is used with the ICU Medical CADD-Solis™ and CADD-Solis VIP devices
- Guardrails™ is used with the BD Alaris™ PK Plus devices.

This document outlines the safe and correct use of PIPS across WACHS. For further information on the DERS Medication Library, please contact the Dose Error Reduction Software (DERS) Team on the email: WACHS.DERS@health.wa.gov.au.

2. Policy

2.1 Use of Dose Error Reporting Software

ATTENTION

For patient safety and adherence to the Medication Prescribing and Administration Policy the DERS Medication Libraries must be used whenever available for fluids and medications administered via parenteral infusion pump systems.

B. Braun Infusomat® Space devices must be used to deliver all:

- intravenous infusions of medications and fluids requiring a volumetric pump
- blood products (unless administered via rapid infuser giving set).

Exceptions relating to B. Braun Infusomat® Space devices are:

- patient-controlled intravenous analgesia (PCIA) or nurse-controlled intravenous analgesia (NCIA) infusions
- regional or epidural infusions
- intravenous infusions administered via syringe driver
- infusions requiring Target-Controlled Infusion (TCI) Modelling, which may also be delivered using B. Braun Perfusor® and BD Alaris™ PK Plus devices
- certain systemic anti-cancer therapies (such as vinca alkaloids), which must be administered via gravity (or those supplied in a pre-filled syringe and administered via manual push).

B. Braun Perfusor® Space devices are the preferred device to deliver all:
- intravenous infusions of all medications and fluids requiring a syringe driver.

Exceptions relating to B. Braun Perfusor® Space devices are:
- PCIA/NCIA infusions
- regional or epidural infusions
- infusions requiring TCI Modelling, which may also be delivered using B. Braun Infusomat® and BD Alaris™ PK Plus devices.

CADD-Solis™ devices must be used to deliver all:
- PCIA/NCIA infusions
- regional, epidural, and intrathecal (neuraxial) infusions
- subcutaneous infusions requiring an infusion-controlled device, unless a T34 Series (Niki pump) device is preferred.

There are no exceptions related to CADD- Solis™ devices.

BD Alaris™ PK Plus devices are the preferred device to deliver all:
- intravenous infusions requiring TCI Modelling

Exceptions relating to BD Alaris™ PK Plus devices are:
- where a BD Alaris™ PK Plus device is not available, a B. Braun Infusomat® or Perfusor® device may be used in patients over 16 years of age.

In addition to those listed above, the only exceptions to the use of the DERS Medication Libraries are:
- in an emergency at the discretion of the Medical Officer in charge (e.g. General Practitioner, Regional Resource Centre ED Doctor, or Emergency Telehealth Service (ETS) Medical Officer) for the duration of the emergency.
- where a DERS-enabled device is not available (e.g. BD Alaris™ GH Plus devices do not contain a DERS Medication Library).

2.2 Dose Error Reporting Software Medication Libraries on B. Braun Space® Devices

B. Braun Space® devices (Infusomat® and Perfusor®) contain a DERS Medication Library (known as DoseGuard™) specific to WACHS. This DERS Medication Library is configured for different patient care areas, known as Care Units (see below). It is the responsibility of the end user to check that the correct Care Unit is in use.

See Appendix A for information on how to check or change a Care Unit.

The following Care Units are available for use across WACHS:
- Adult Critical Care
- Adult General
- Adult Haem Onc
- Adult Obstetric
- Paed Critical Care
- Paed General
- Paed Haem Onc
- Neonatal
- Care Units designated as **Adult** are for use in patients over 16 years of age.
- Care Units designated as **Paed** (Paediatric) are for use in patients aged 28 days to 16 years of age.

- Care Units designated as **Critical Care** are for use in Emergency Departments (ED), Operating Theatres, High Dependency Units/Areas (HDU/HDA), and Intensive Care Units (ICU). It may also be appropriate to use a Care Unit designated as **Critical Care** in the event of a medical emergency.
- Care Units designated as **General** are for use in any clinical area.
- Care Units designated as **Haem Onc** (Haematology/Oncology) are for use in Day Infusion Units or clinical areas where systemic anticancer therapy, immunotherapy, or enzyme therapy infusions are administered.
- The **Adult Obstetric** Care Unit is for use during pregnancy, childbirth, and the post-partum period.
- The **Neonatal** Care Unit is for use in patients with a corrected age of 28 days or less.

All Care Units are available on all B. Braun Space® devices.

The DoseGuard™ Library is managed by the DERS Team and endorsed via appropriate governance pathways (refer to Section 2.9). All queries should be directed to the DERS Team via the email: WACHS.DERS@health.wa.gov.au.

2.3 Dose Error Reporting Software Mediation Libraries on CADD-Solis™ Devices

CADD-Solis™ devices are available with 2 faceplate colours:

- devices with a **yellow** faceplate are for use with neuraxial or regional analgesia/anaesthesia and have a PharmGuard™ Library containing associated protocols.
- devices with a **grey** faceplate are for use with intravenous and subcutaneous infusions and have a PharmGuard™ Library containing associated protocols.

The PharmGuard™ Libraries are coordinated by the DERS Team and endorsed via appropriate governance pathways (refer to Section 2.9).Queries regarding the PharmGuard™ Libraries should be directed to the DERS Team via the email: WACHS.DERS@health.wa.gov.au in the first instance.

2.4 Dose Error Reporting Software Medication Libraries on BD Alaris™ Devices

BD Alaris™ PK Plus devices have a Guardrails™ TCI library available for use. The TCI Library includes the following:

Medication	Model	Patient Group
Propofol	Marsh	≥16 years
	Schnider	≥16 years
	Kataria	3 – 11 years
	Paedfusor	1 – 16 years
Remifentanil	Minto	≥12 years
Sufentanil (SAS)	Gepts	≥12 years

Table 1 - Guardrails TCI Models

The Guardrails™ Libraries are managed by the product vendor and WACHS Biomedical Engineering (BME). Queries regarding the Guardrails™ Libraries should be directed to BME on (08) 9318 6888 (Monday-Friday 8am - 4pm).

2.5 Medication Preparation for Administration via Large Volume Pump

The DERS Medication Libraries use concentration information to calculate doses and/or volumes delivered. Any change to the volume to be administered (VTBI) also changes the dose calculated by the pump (and vice versa). This may result in erroneous DERS Hard or Soft Limit Alerts and may also be recorded in the monitoring software as a dose discrepancy.

To ensure safe and precise medication/fluid delivery and an accurate clinical record, a corresponding volume of fluid must be removed from the diluent container before adding any medications. This practice should be consistently applied by all staff to all infusions delivered via Large Volume Pump to reduce variability in medication concentration administered to patients. This aspect is of particular importance for infusions that run over more than one shift or require preparation of multiple bags/bottles (e.g., insulin, vasopressors, sedation, etc.) to reduce the need for unnecessary re-titration of infusion rates.

Worked Example

To prepare an 80 mg/100 mL infusion of pantoprazole:
1. reconstitute two 40 mg pantoprazole vials with 10 mL sodium chloride 0.9% each
2. withdraw the required dose (80 mg) from the reconstituted vials (20 mL)
3. remove a corresponding volume (20 mL) from a 100 mL sodium chloride 0.9% minibag
4. add the required dose (80 mg/20 mL) to the sodium chloride 0.9% minibag for a final preparation of 80 mg/100 mL

2.6 Patient Transfer

Transfer between wards/areas within a WACHS Site

It is the responsibility of the staff member transferring the patient to ensure that any infusions in progress are programmed for the area where the patient is being transferred. For example, if a patient is transferring from ED to a general ward area, the ED staff member must ensure the infusion pump is operating in a Care Unit designated as “General”.

Refer to Appendix A for information on how to check or change a Care Unit.

Transfer between WACHS Sites:

Within WACHS, including interregional transfers, to prevent the accumulation of devices at regional resource centres and intermediary transfer sites, infusion pumps must be retrieved on arrival to maintain appropriate distribution of devices throughout the WACHS network.

For patients being transferred by non-WACHS services (e.g. St John Ambulance (SJA), Royal Flying Doctor Service (RFDS)), all WACHS devices must be retrieved **before** transfer. That is, the device attached to the patient is switched out **prior** to the patient departing. The exception to this is when a WACHS staff member is accompanying the patient, in which case the device can be retrieved on arrival and returned with the WACHS staff member.

Transfer to a non-WACHS Site:

WACHS devices must be retrieved on arrival at the end destination by the escorting WACHS staff member, for any patients transferred to another site (outside of WACHS). Where patients are transferred by non-WACHS services (e.g. SJA, RFDS) and there is no WACHS staff member escort, all WACHS devices must be recovered **before** transfer. That is, the device attached to the patient is switched out **prior** to the patient departing.

B. Braun Space®, CADD-Solis™ and BD Alaris™ devices are used across multiple Health Service Providers (HSPs) however the DERS Medication Library versions differ between HSPs.

DERS Medication Libraries are programmed based on local protocols and significant differences may be present. Use of a non-WACHS device at a WACHS site, or vice versa, may inadvertently result in patient harm due to unexpected device behaviour.

2.7 Limitations to the functionality of Dose Error Reduction Software

The use of DERS Medication Libraries on Parenteral Infusion Pump Systems (PIPS) does not replace the need for appropriate clinical checks, including the 'six rights of safe medication administration'. Medication administration must always be undertaken in accordance with the Medication Prescribing and Administration Policy.
DERS Medication Libraries are unable to check:

- allergies or other clinical particulars relating to a patient
- medication orders, patient details or timing of doses
- that the medication or fluid selected is correct.

The correct Care Unit must always be used. Prior to administering any medications or fluids using the PIPS, staff must ensure that the correct Care Unit for the patient and clinical area is in use (refer to Appendix A). DERS Medication Libraries are unable to detect the age of patients, which may result in application of the wrong pressure settings for medication administration.

Medications must always be prescribed and administered in line with relevant policies and in a manner that is within the individual's scope of practice. Presence of a medication or protocol in the DERS Medication Library does not negate the need for appropriately trained and experienced staff.

2.8 Basic Mode

Basic mode refers to the use of a DERS-enabled device outside of the DERS Medication Libraries. Basic Mode has no limits on infusion parameters other than the physical mechanical limits of the device in use.

ATTENTION

Use of Basic Mode applies the last used settings to DERS-enabled devices which may not be appropriate for all patient cohorts. Care should be taken when using Basic Mode in paediatric and neonatal patients.

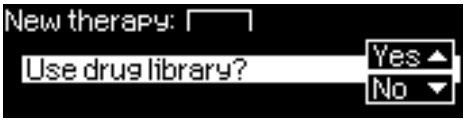
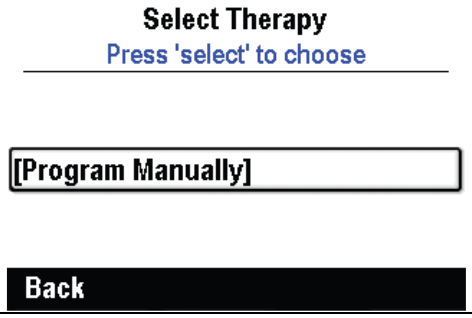
Device/Device Family	Screen Capture
B. Braun Space® device To activate Basic Mode, select 'No' when prompted to use the drug library.	
CADD-Solis™ device To activate Basic Mode, select '[Program Manually]' from the Therapy screen. The Administrator Code is required to activate this mode. Refer to Restricted Access Resource.	
BD Alaris™ PK or PK Plus device To activate Basic Mode, select 'No' on the TCI Mode screen, then select 'mL/hr' from the TIVA (Total Intravenous Anaesthesia) Mode screen.	

Table 2 - Activation of Basic Mode on DERS-Enabled Devices

Basic Mode may be appropriate in the following scenarios:

- in the event of a medical emergency at the direction of the Medical Emergency Response (MER) Team
- where a medication or protocol is not present in the DERS Medication Library.

Basic Mode on B. Braun Space® devices

For the B. Braun Space® devices only, an additional entry "ZZ NO DERS ENTRY" has been included in all Care Units. This is to be used in the event that a medication or protocol is not present in the DERS Medication Library. Use of this additional entry allows for tracking and improvement of the DERS Medication Libraries by the DERS Team, via the central reporting software DoseTrac®.

In all situations where Basic Mode or "ZZ NO DERS ENTRY" is used, a 2-person check must be completed noting the following:

- In locations where a second staff member is not on site, the second check may not be required (check local policies).
- A report must be made to the DERS Team via the WACHS DERS SharePoint site.

In the event that Basic Mode has been used in a medical emergency for a medication included in the DoseGuard™ Library, the DoseGuard™ safety limits should be applied to the infusion as soon as possible. This can be done without interrupting the infusion and applies to B. Braun Space® devices only.

Directions	Screen Capture

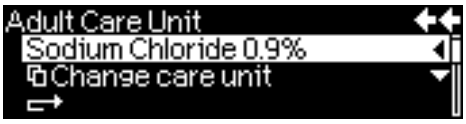
From the run screen, press  to return to the main menu.	
Use the arrow keys to scroll to **Special Functions**.	
Select **Drug Library** from the Special Functions Menu.	
Select the medication from the DoseGuard™ Medication Library as per standard practice.	
Select “Yes” to apply DoseGuard™ limits to the currently running infusion.	
The infusion is now running inside the DoseGuard™ Medication Library.	

Table 3 - Applying DERS Limits to a Basic Mode Infusion

2.9 Dose Error Reduction Software Medication Library Updates

To ensure best practice and patient safety, DERS Medication Libraries will be regularly updated and distributed to DERS-enabled devices across WACHS (refer to sections 2.9 and 2.10).

DERS Medication Library updates will occur sequentially (i.e. v1, v2, v3, etc.) and will be communicated via email and SharePoint prior to upload. The current version number for the DERS Medication Library can be confirmed on the WACHS DERS SharePoint site.

ATTENTION

It is the responsibility of the end user to ensure that the current DERS Medication Library version is in use.

The update processes vary for the different devices in use across WACHS sites. Please refer to the relevant appendices (Appendix B to F) for information on the update processes for each device type.

Checking current Dose Error Reduction Software Medication Library Version

On B. Braun Space® devices, the DERS Medication Library version displays on the screen when the pump is in Passive Mode (powered off and connected to AC power).

The version number also displays at the bottom of the screen when the pump is in use (use the up or down arrows to scroll through the options).

On CADD-Solis™ devices, the DERS Medication Library version displays on the “Protocol Library Summary” report. This is accessed from the Home menu. Select “Reports”, and scroll through the options using the down arrow, highlighting the Protocol Library Summary option. The library version will display on this screen.

2.10 Dose Error Reduction Software Medication Library Governance

Required changes or additions to the WACHS DoseGuard™, PharmGuard™ and Guardrails™ libraries may be identified by the DERS Team, medical, nursing or pharmacy staff through:

- routine use of the infusion devices
- Continuous Quality Improvement (CQI) software reports and analysis
- changes to existing or new WACHS protocols/guidelines
- changes to product administration information
- clinical incident reviews; or
- new medication therapies (via Individual Patient Approvals (IPAs) or additions to the Statewide Medicines Formulary (SMF)).

Requests for changes or additions to the DERS Medication Libraries should be sent to the DERS Team using the email: WACHS.DERS@health.wa.gov.au. Changes or additions will be reviewed, processed, tested and endorsed through the WACHS Medication Safety Committee (MSC), WACHS Antimicrobial Stewardship Committee (AMSC) or regional Medicines and Therapeutics Committee, as appropriate.

DERS Medication Libraries will be updated a minimum of biannually, with urgent changes or additions prioritised in consultation with the WACHS MSC, WACHS AMSC or regional Medicines and Therapeutics Committee, as appropriate.

2.11 Configuration and Endorsement Process

Modifications or additions required to the DERS Medication Libraries will be processed by the DERS Team and validated by the Medicines Information Pharmacist. Any

modifications or additions to the DERS Medication Library will be in line with best practice (e.g. Product Information, Australian Injectable Drugs Handbook (AIDH), Australian Medicines Handbook (AMH), the Therapeutic Guidelines, eviQ, WACHS policies / procedures / guidelines, and endorsed policy documents from other HSPs (including the System Manager).

Where information cannot be found in standard reference sources, expert opinion will be sought and recorded in TRIM as part of the change consultation process.

Amendments to a WACHS-Wide DERS Medication Library

Any modifications or additions to a WACHS-Wide DERS Medication Library will be endorsed by the WACHS MSC (or WACHS AMSC as appropriate) whose primary role is to confirm that adequate consultation, clinical review and due diligence has been carried out by the DERS Team.

Amendments to a Region-Specific DERS Medication Library

Any modifications or additions required to a region-specific DERS Medication Library must be developed in collaboration with the DERS Team. Modifications or additions must be endorsed by the local Regional Medication and Therapeutics Committee (regional MTC) or Regional Medication Safety Committee (regional MSC), whichever is most appropriate for the affected region. The regional MTC / regional MSC is responsible for ensuring appropriate consultation, clinical review and due diligence has been conducted.

Following endorsement by the regional MTC / regional MSC, the changes must be communicated to the DERS Team for version and quality control and to the WACHS MSC for noting.

Region-specific DERS Medication Libraries will only be released to BME for deployment following completion of the following process:

1. local team liaises with DERS Team for guidance and drafting of new/amended protocols
2. local team performs stakeholder engagement and clinical review
3. required changes to the draft are communicated to the DERS Team for actioning
4. the final draft must be endorsed by the regional MTC / regional MSC
5. following local endorsement, an agenda item must be raised with the WACHS MSC for noting
6. the WACHS MSC agenda coversheet must also be provided to the DERS Team as confirmation of local endorsement for implementation, and to prompt version control checkpointing by the DERS Team
7. following version control checkpointing, the DERS Team will:
    a. provide a final version of the file to BME for uploading to the relevant devices.
    b. prepare a supplementary agenda coversheet for the WACHS MSC advising of the final version number implemented.

Note: Step 7 can occur upon completion of Steps 5/6 and is independent of the WACHS MSC Meeting.

3. Roles and Responsibilities

End Users: All WACHS staff who administer medications using the DERS-enabled devices are responsible for:

- ensuring they use the DERS Medication Library
- checking that they are using the current version of the DERS Medication Library (refer to Section 2.8)
- reporting any errors or faults with the PIPS or DERS Medication Libraries (refer to Appendix G).

The **DERS Team (Central Office)** are responsible for:

- coordinating required updates/changes to the WACHS DERS Medication Libraries, including facilitating endorsement via appropriate governance pathways
- providing communication to user group regarding rollout of updates to DERS Medication Libraries
- monitoring DERS Medication Library compliance levels.

The **regional medical, nursing, and pharmacy staff** are responsible for reporting any identified modifications or additions required to the DERS Medication Libraries to the DERS Team.

Biomedical Engineering (BME) are responsible for:

- coordinating the rollout of DERS Medication Libraries on CADD-Solis™ and BD Alaris™ PK Plus devices
- assisting as required, with the update of DERS Medication Libraries on B. Braun Space® devices at sites with no Wi-Fi coverage.

All staff are required to comply with the directions in WACHS policies and procedures as per their roles and responsibilities. Guidelines are the recommended course of action for WACHS and staff are expected to use this information to guide practice. If staff are unsure which policies procedures and guidelines apply to their role or scope of practice, and/or are unsure of the application of directions they should consult their manager in the first instance.

4. Monitoring and Evaluation

The B. Braun Space® Devices (Infusomat® and Perfusor®) are equipped with the Continuous Quality Improvement (CQI) software, DoseTrac®. DoseTrac® is able to provide reports and data for identifying:

- DERS Medication Library compliance levels (i.e. occasions where Basic Mode was utilised)
- incidence and trends in alerts triggered (e.g. soft limits exceeded)
- medications triggering excessive alarm overrides
- rates of usage of classes of medications (or individual medications).

Note: this software relies on the pump(s) having access to Wi-Fi.

DoseTrac® CQI reports will be generated and reviewed at least quarterly, in order to guide improvements in the PIPS and DERS Medication Library. A summary of these reports will be provided to the relevant Medication Safety Committee and Antimicrobial Stewardship Committee as required. Any learning or compliance improvement opportunities identified

through this analysis, will be distributed via the relevant Nursing Educator networks. Identified changes to the DERS Medication Library will be actioned as per the process outlined in Section 2.10.

This policy will be reviewed as required to determine effectiveness, relevance and currency. At a minimum it will be reviewed every five years by the DERS Team.

5. References

The authors of this policy wish to acknowledge the previous site-endorsed works that were used to compile this policy:

Fiona Stanley Fremantle Hospitals Group. 2023. *Smart Infusion Pumps Procedure.* 4. Perth, Western Australia, June. https://healthpoint.hdwa.health.wa.gov.au/policies/FSH%20Policies/Smart%20Infusion%20Pumps%20at%20FSH.pdf.

Peel Health Campus. 2024. *Smart Infusion Pumps and Dose Error Reduction Software (DERS) Procedure.* 1.0. Perth, Western Australia, August. https://healthpoint.hdwa.health.wa.gov.au/policies/Policies/SMAHS/PEEL/Smart%20Infusion%20Pumps%20and%20Dose%20Error%20Reduction%20Software%20(DERS).pdf.

Perth Children's Hospital. 2022. *Smart Infusion Pumps and Dose Error Reduction Software (DERS) Policy.* 1. Perth, Western Australia, May. https://healthpoint.hdwa.health.wa.gov.au/policies/Policies/CAHS/PCH.PHARM.SmartInfusionPumpsAndDoseErrorReductionSoftware(DERS).pdf.

Royal Perth Bentley Group. 2024. *SMART Infusion Pumps and Dose Error Reduction Software (DERS) Policy.* 2.1. Perth, Western Australia, August. https://healthpoint.hdwa.health.wa.gov.au/policies/Policies/EMHS/RPH/SMART%20Infusion%20Pumps%20and%20Dose%20Error%20Reduction%20Software%20(DERS)%20Policy.pdf.

Sir Charles Gairdner Osborne Park Health Care Group. 2021. *Smart Infusion Pumps (SIPS) and Dose Error Reduction Software (DERS) Policy.* 1. Perth, Western Australia, April. https://healthpoint.hdwa.health.wa.gov.au/policies/Policies/NMAHS/SCGH/SCGOPHCG.HMP.Smart_Infusion_Pump_Dose_Error_Reduction_Software.pdf.

6. Definitions

Term	Definition
Basic / Manual Mode	This mode is enabled when selecting “No” to using the DERS Medication library when prompted by the pump. **This mode should only be used in the circumstances described in Section 2.7.** This function removes all safety limits and infusions are run in a basic mL/hour mode. A **two-person check** must occur at the pump for all infusions run in this mode. The check **must** include review of the pressure settings before starting the infusion.

Term	Definition
BD Alaris™ GH Plus	The proprietary name for the Becton Dickinson syringe pump used across WACHS.
BD Alaris™ PK Plus	The proprietary name for the Becton Dickinson syringe pump with Target-Controlled Infusion (TCI) modelling used in theatres across WACHS.
CADD-Solis™	The proprietary name for the ICU Medical Computerised Ambulatory Delivery Device (CADD™) infusion pump used across WACHS.
Care Units	A medication protocol set (DERS Medication Library) and instrument configuration settings appropriate for a specific care area (e.g. Haematology/Oncology).
Continuous Infusion, Bolus	A programmable mode for medications administered at a continuous rate defined by a unit of mass over a unit of time e.g., mg/hour, microgram/kg/minute. Medications may be programmed with weight-based or non-weight-based dosing and may have standard or variable concentrations. Certain medications administered via continuous infusion may be programmed with a bolus dose. All medications with an enabled bolus function are bound by dosing limits and rate of administration. Select medications have a manual bolus enabled. The rate of administration is the parameter being checked by DERS, the total medication dose and total infusion time are not checked and are only constrained by the volume of medication or fluid available to the device.
Default / Initial Value	A pre-set initial value within the medication library for doses, rates, and bolus doses. This initial value is a common starting dose or rate specific for the selected medication, but can always be altered as per the prescription and/or patient requirements.
DERS Medication Library	A collection of medication protocols categorised into methods of administration e.g., continuous/bolus infusions and dose-over-time (intermittent) infusions. This may also be referred to as a Drug Library, however DERS Medication Library is the preferred term.
Dose Error Reduction Software (DERS)	Integrated safety software that uses a medication library with predefined limits for dosing and administration rates to prevent medication errors. The medication library is configured by specialist clinicians and tailored to local policies and patient requirements.
DoseGuard™	The proprietary name for the B. Braun DERS application used across WACHS.

Term	Definition
Dose-Over-Time / Intermittent Infusion	A programmable mode for medications where administration is defined by a unit of mass over a duration of time e.g., 1 gram over 1 hour, 15 mg/kg over 15 minutes. Medications may be programmed with weight-based or non-weight-based-dosing and may have standard or variable concentrations. The total medication dose and total infusion time are the parameters being checked by DERS, the rate of administration is not checked and is only constrained by the mechanical limits of the device.
DoseTrac®	The proprietary name for the B. Braun DERS reporting software used across WACHS.
Drug Information Alert	A programmable information message that appears on the pump's screen and requires the user to acknowledge the information before commencing the infusion. Drug Information Alerts include practical or clinical information e.g., "Use in-line 0.2 micron filter", "Cardiac monitoring required".
Guardrails™	The proprietary name for the Becton Dickinson DERS application used across WACHS.
Hard Limit	The absolute minimum or maximum value that may be programmed. When attempting to program outside hard limits, an alert is displayed. Hard limits cannot be overridden.
Infusion Pump Systems	Any mechanical device that applies pressure to administer medication or fluids in a controlled manner, and any associated hardware that forms a technology ecosystem e.g., B. Braun Space Platform.
Infusomat® Space	The proprietary name for the B. Braun volumetric pump used across WACHS.
Passive Mode	For B. Braun Space® devices, passive mode is where the device is connected to AC power and switched off.
Perfusor® Space	The proprietary name for the B. Braun syringe pump used across WACHS.
PharmGuard™	The proprietary name for the ICU Medical DERS application used across WACHS.
Soft Limit	The minimum or maximum value that may be programmed without triggering an alert. When programming outside soft limits, a confirmation screen is displayed, and the end user must confirm the limit override if clinically appropriate or check the settings. Overriding a soft limit may be appropriate, for example, in critically ill patients or patients at extremes of weight requiring particularly small or large doses of medication.
Space®Com	A Space®Station with communication capabilities, allowing pumps in the Space®Station to connect to a wireless or wired network. When combined with other Space®Stations, the Space®Com device must be at the bottom of the stack to allow all Space®Stations in the stack to connect to the network.

Term	Definition
Space®Cover, Space®Cover Comfort	A cover for the Space®Station stacks with a handle that allows the stacks to be carried. The Space®Cover Comfort integrates a speaker and status indicators that provide an at-a-glance overview of the running infusions.
Space®Station	A docking station capable of accommodating up to 4 B. Braun Space® infusion devices (either large volume pumps or syringe pumps). Space®Stations can be combined in a stack with additional Space®Stations to accommodate up to 24 pumps (i.e., 6 Space®Stations) with only 1 power cord.
TCI (Target-Controlled Infusion) Modelling	A calculation mode on infusion pumps that uses pharmacokinetic models to achieve target concentrations of medications in particular body compartments. At WACHS, TCI Modelling is used by anaesthetists as part of Total Intravenous Anaesthesia (TIVA).

7. Document Summary

Coverage	WACHS-wide
Audience	Medical, nursing, midwifery, pharmacy and biomedical engineering.
Records Management	Non Clinical: Corporate Recordkeeping Compliance Policy
Related Legislation	*National Health Act 1953* (Cth) *Medicine and Poisons Act 2014* (WA) Medicines and Poisons Regulations 2016 (WA)
Related Mandatory Policies / Frameworks	• MP 0122/19 Clinical Incident Management Policy • MP 0140/20 Cloud Policy • MP 0175/22 Consent to Treatment Policy • MP 0072/17 Health Technology Governance Policy • MP 0131/20 High Risk Medication Policy • MP 0067/17 Information Security Policy • MP 0110/19 Management of Medical Equipment Policy • MP 139/20 Medicines Handling Policy • MP 0125/19 Notifiable and Reportable Conduct Policy • MP 0134/20 National Safety and Quality Standards Accreditation Policy • MP0077/18 Statewide Medicines Formulary Policy • MP 0109/19 Strategic Asset Plan Policy • Clinical Governance, Safety and Quality Framework • Infrastructure (Asset management) Framework • Information and Communication Technology Framework • Public Health Framework
Related WACHS Policy Documents	• High Risk Medications Procedure • Medication Handling and Accountability Policy • Medication Prescribing and Administration Policy • Infection Prevention and Control Policy • Working in Isolation – Minimum Safety and Security Standards for All Staff Policy • Epidural/Spinal Analgesia Management Policy
Other Related Documents	• Restricted Area Resource – DERS-Enabled Device Access Codes (this document is only accessible via WACHS Intranet)
Related Forms	Nil
Related Training	WACHS DERS SharePoint Site
Aboriginal Health Impact Statement Declaration (ISD)	ISD Record ID: 2620
National Safety and Quality Health Service (NSQHS) Standards	1.07, 1.27, 4.13, 4.15, 7.06

Aged Care Quality Standards	Nil
Chief Psychiatrist's Standards for Clinical Care	Nil
Other Standards	Nil

8. Document Control

Version	Published date	Current from	Summary of changes
1.00	11 December 2024	11 December 2024	New policy

9. Approval

Policy Owner	Executive Director Clinical Excellence
Co-approver	Executive Director Nursing and Midwifery
Contact	WACHS Director Pharmacy (Chief Pharmacist)
Business Unit	Clinical Excellence and Medical Services
EDRMS #	ED-CO-24-433000

This document can be made available in alternative formats on request.

Appendix A: Checking and Changing Care Units on B. Braun Space® Devices

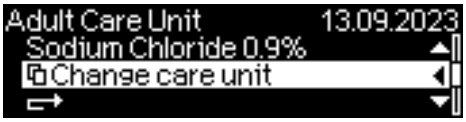
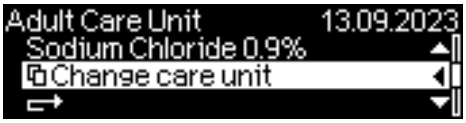
Directions	Screen Capture
While the pump is powered off and connected to AC power (Passive Mode), the screen displays the Care Unit that the pump will set to when powered on (i.e. the most recent Care Unit used on that pump).	
When the pump has been powered on and the user has selected YES to use the drug library, the name of the current Care Unit is displayed at the top of the medication list screen.	
To change to a different Care Unit within the library, select “Change care unit” from the bottom of the ‘Category’ list.	
While an infusion is in progress, the user can view the current Care Unit by scrolling through the Status Bar information on the run screen. The Care Unit will be displayed in the Status Bar at the bottom of the screen.	
After a DoseGuard™ Library update, no Care Unit will be shown on the screen in Passive Mode.	

Table 4 - Checking and Changing Care Units on B. Braun Space Devices

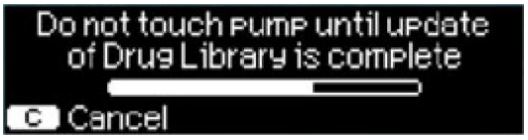
Appendix B: DoseGuard™ Library Updates (Full Wi-Fi Coverage)

This appendix applies in the following circumstances:

Manufacturer	Device Type	Wi-Fi Coverage
B. Braun	Infusomat® Space® Perfusor® Space® Space®Com	Full Site

For WACHS facilities with full site Wi-Fi coverage, the DoseGuard™ DERS Medication Library updates are automatically deployed to pumps via Wi-Fi or when connected to a Space®Com docking station.

The DERS Medication Library updates are only uploaded to the pump when the pump is in Passive Mode (i.e. switched off and connected to power via an AC adaptor or a Space®Com docking station). The pump must remain connected to AC power until the DERS Medication Library update is completed.



If an update is deployed whilst a pump is in use, a blinking file icon will display on the screen (see below). The infusion should be continued until completion. Once the infusion is completed, the pump should be switched off and connected to power via an AC adaptor or a Space®Com docking station. The updated DERS Medication Library will then be automatically uploaded to the pump.

Pumps in Space®Stations (i.e., non-networked docking stations) need to be removed from the Space®Station and connected to power via an AC adaptor to receive the DERS Medication Library update. Space®Stations temporarily deactivate the Wi-Fi module in the pumps, so DERS Medication Library updates are not automatically applied.

Confirmation of DERS Medication Library Update

Once the update has completed, an alert message will display on the screen when the pump is next switched on, alerting the clinician that the updated library is now available, and the pump settings have been reset. The user will need to reselect the appropriate Care Unit prior to using the pump.

ATTENTION

It is the responsibility of the end user to ensure that the current DERS Medication Library version is in use. Current library versions are listed on the WACHS DERS SharePoint site.

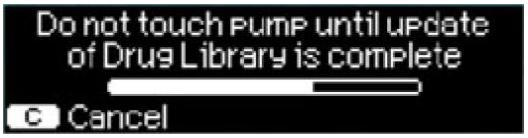
Appendix C: DoseGuard™ Library Updates (Partial Wi-Fi Coverage)

This appendix applies in the following circumstances:

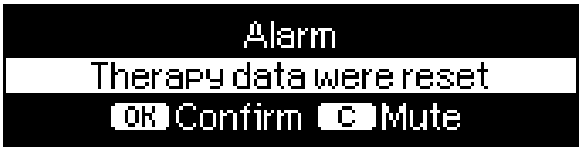
Manufacturer	Device Type	Wi-Fi Coverage
B. Braun	Infusomat® Space® Perfusor® Space® Space®Com	Partial Site

For WACHS facilities with partial site Wi-Fi coverage, the DoseGuard™ DERS Medication Library updates can be accessed by temporarily moving the pump to a Wi-Fi enabled area. The pump will need to be switched to Passive Mode (i.e. switched off and connected to power via an AC adaptor).

The DERS Medication Library updates will commence automatically within 1-2 minutes of connecting to Wi-Fi. Do not disconnect the pump from AC power until the update is done.



Once the update is completed, an alert message will display on the screen when the pump is next switched on. This alerts the clinician that the updated library is now available, and the pump settings have been reset. The user will need to reselect the appropriate Care Unit prior to using the pump.



Alternatively (if available), the pump can be connected to a Space®Com docking station, which enables connection to the network and installation of the updated DERS Medication Library.

ATTENTION

It is the responsibility of the end user to ensure that the current DERS Medication Library version is in use. Current library versions are listed on the WACHS DERS SharePoint site.

Appendix D: DoseGuard™ Library Updates (No Wi-Fi Coverage)

This appendix applies in the following circumstances:

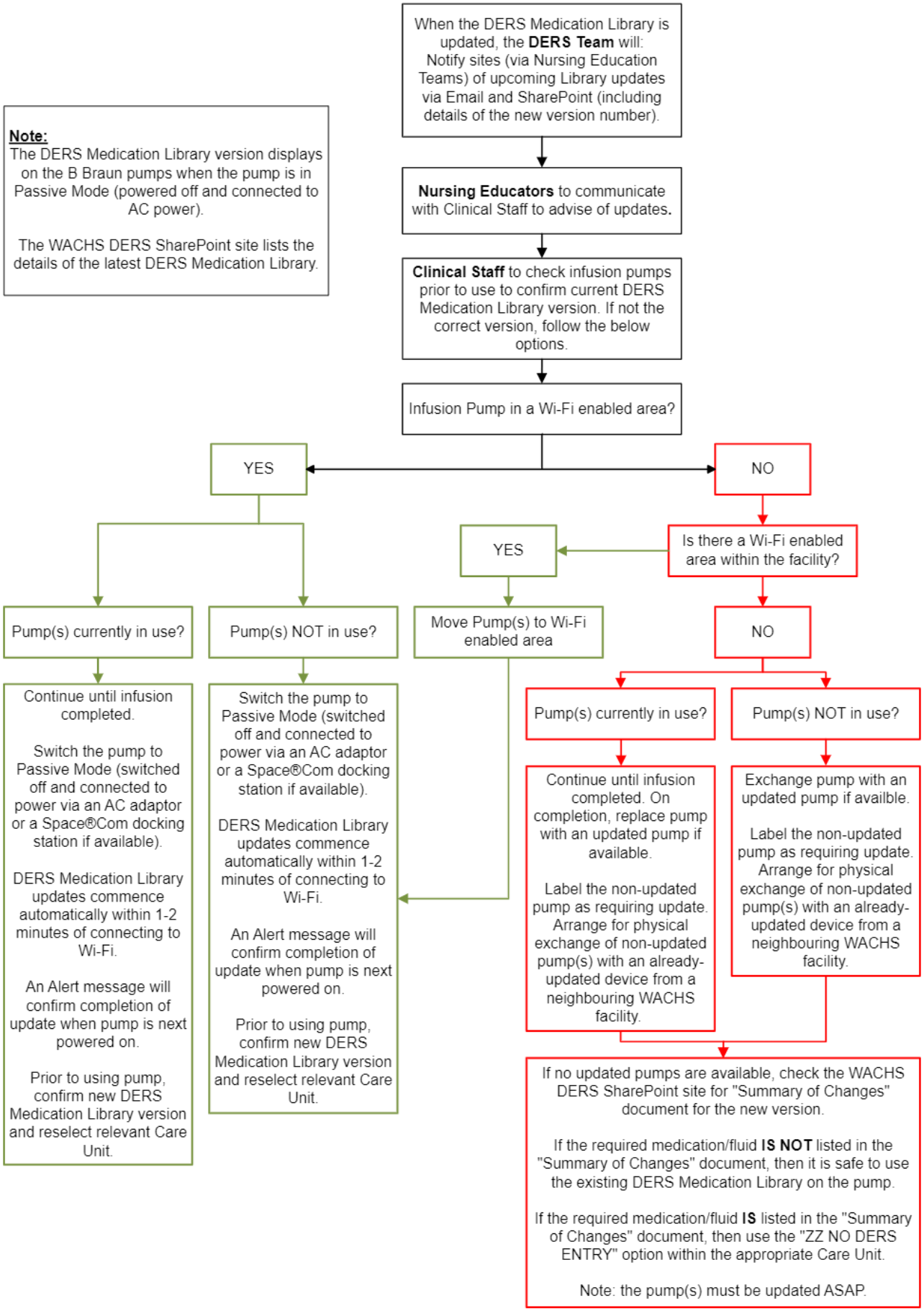
Manufacturer	Device Type	Wi-Fi Coverage
B. Braun	Infusomat® Space® Perfusor® Space® Space®Com	None

For WACHS facilities with no Wi-Fi coverage, the DoseGuard™ DERS Medication Library updates will need to be accessed by physically exchanging the pumps with an already-updated device from a neighbouring WACHS facility.

In the event that an infusion needs to be given, and no updated pump is available on site, check the WACHS DERS SharePoint site to review the “Urgent Corrections” and “Summary of Changes” for the latest DERS Medication Library update. These will outline the medications or fluids that have been modified in the new version. If the medication or fluid being administered is not in the “Summary of Changes”, then it is safe to continue to use the existing DERS Medication Library on the available pump, noting that the update should be actioned as soon as possible.

If the medication or fluid being administered is listed in the “Summary of Changes” document, the user should select the “ZZ NO DERS ENTRY” option within the appropriate Care Unit, and manually enter the parameters for the infusion.

Appendix E: DERS Medication Library Updates Flow Chart for B. Braun Space® Devices



Appendix F: PharmGuard™ and Guardrails™ Library Updates

This Appendix applies in the following circumstances:

Manufacturer	Device Type
ICU Medical	CADD-Solis™ CADD-Solis™ VIP
BD Alaris™	PK Plus

The distribution of updates to the PharmGuard™ and Guardrails™ Medication Libraries are co-ordinated by Biomedical Engineering (BME). When an update becomes available, BME will make arrangements to rollout the updates to the relevant pumps across WACHS sites.

Any queries related to the distribution of updates to these devices should be directed to BME on (08) 9318 6888 (Monday-Friday 8am - 4pm).

Appendix G: Reporting a PIPS Error, Malfunction or Failure

This appendix relates to any pump errors or malfunctions which occur when using the PIPS devices.

Ensure patient care is not adversely affected
Take any actions required as per standard practice to continue providing patient care. This may include, but is not limited to:

- Obtaining a new infusion device to continue or recommence any necessary infusions
- Providing supportive care and contacting medical officer(s) as necessary
- Documenting any changes in therapy in the healthcare record.

Note any error messages displayed on the infusion pump
Make a note of, or if possible, take a picture of any message/alert/error displayed on the infusion pump to attach to the Clinical Incident Management System (CIMS) record.

Note the configuration/setup of infusion lines and bags

- If possible, take a picture of the lines/bags in use and how they were set up at the bedside when the error occurred to attach to the CIMS record.
- This includes documenting the volume of fluid left in the syringe/infusion bag.

Note the BME Item Number and Serial Number of the infusion pump
The BME Item Number is on the blue and white sticker on top of the device, and the Serial Number is on the silver sticker on the bottom of the device:

Remove the infusion pump from circulation

- Isolate the infusion pump and mark for collection by or return to BME for investigation. Key presses, infusion logs and error history can be downloaded from the device, so it is important that the pump is not used after the error/failure/malfunction occurs.

Complete a CIMS record
To ensure the report is allocated correctly for investigation, use the following tier grading:

Incident type tier one	Medical Devices, Equipment, Supplies
Incident type tier two	Mechanical/Structural/Electrical Processes
Incident type tier three	Malfunction/failure
Product type	Infusion Pumps and Sets

Contact the DERS Team and the appropriate local personnel
Report the event to the DERS Team (via WACHS.DERS@health.wa.gov.au) and appropriate local investigator to ensure prompt follow up.