



Clinical Practice Procedures: Drug administration/Blood warmer – °MEQU

Policy code	CPP_DFA_BW_0221
Date	February, 2021
Purpose	To ensure a consistent procedural approach to for the blood warmer – °MEQU.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
Review date	February, 2024
Information security	UNCLASSIFIED – Queensland Government Information Security Classification Framework.
URL	https://ambulance.qld.gov.au/clinical.html

While the QAS has attempted to contact all copyright owners, this has not always been possible. The QAS would welcome notification from any copyright holder who has been omitted or incorrectly acknowledged.

All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

Disclaimer

The Digital Clinical Practice Manual is expressly intended for use by appropriately qualified QAS clinicians when performing duties and delivering ambulance services for, and on behalf of, the QAS.

The QAS disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this manual, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

© State of Queensland (Queensland Ambulance Service) 2021.



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives V4.0 International License

You are free to copy and communicate the work in its current form for non-commercial purposes, as long as you attribute the State of Queensland, Queensland Ambulance Service and comply with the licence terms. If you alter the work, you may not share or distribute the modified work. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>

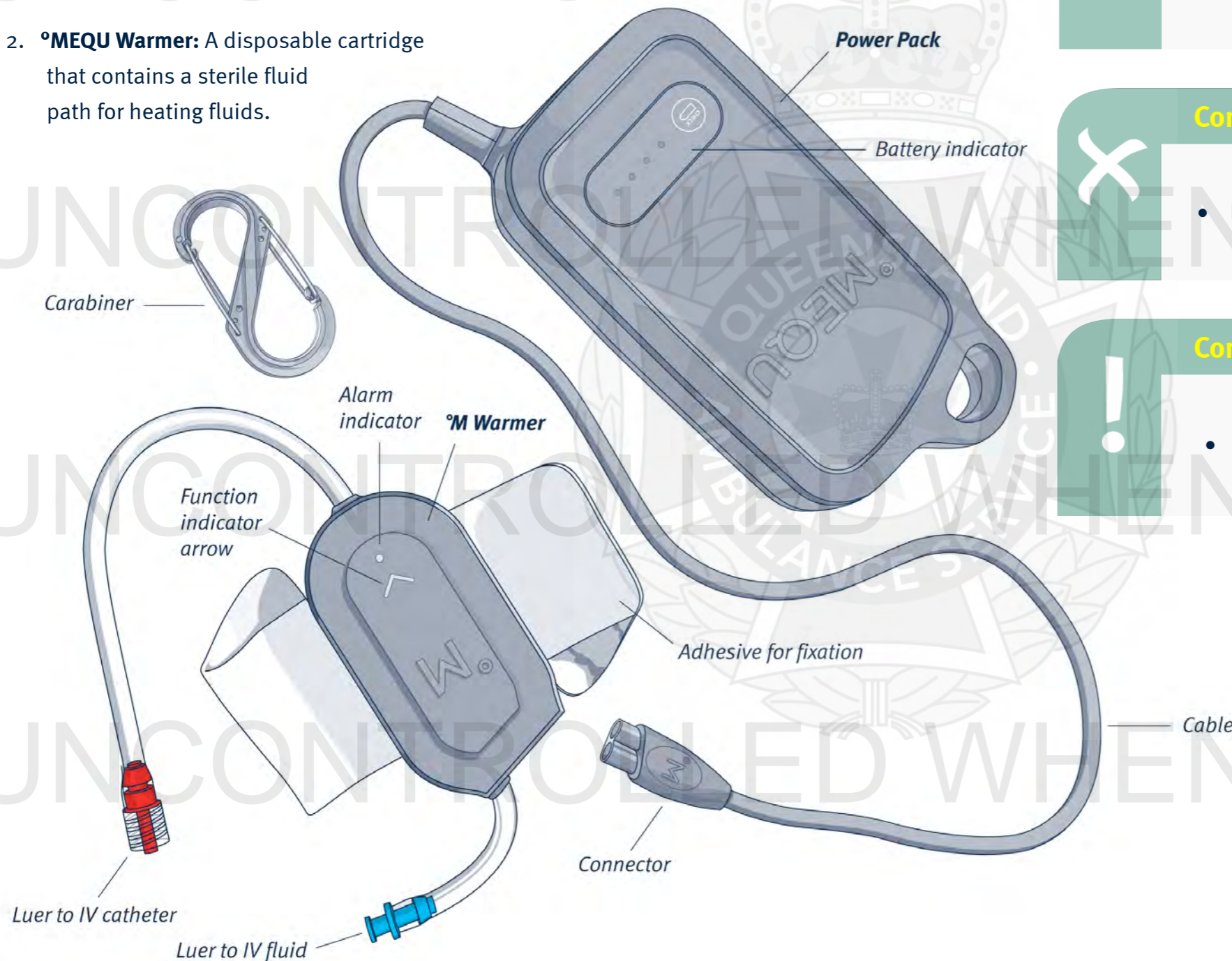
For copyright permissions beyond the scope of this license please contact: Clinical.Guidelines@ambulance.qld.gov.au

Blood warmer—°MEQU

February, 2021

The °MEQU is a battery powered portable fluid warming system used to administer warmed blood and blood products. The °MEQU consists of two main components:

1. **°MEQU Power Pack:** A rechargeable battery unit that supplies power to the °MEQU Warmer.
2. **°MEQU Warmer:** A disposable cartridge that contains a sterile fluid path for heating fluids.



Indications

- To prepare the °MEQU prior to the administration of warmed blood and/or blood products.

Contraindications

- Nil in this setting.

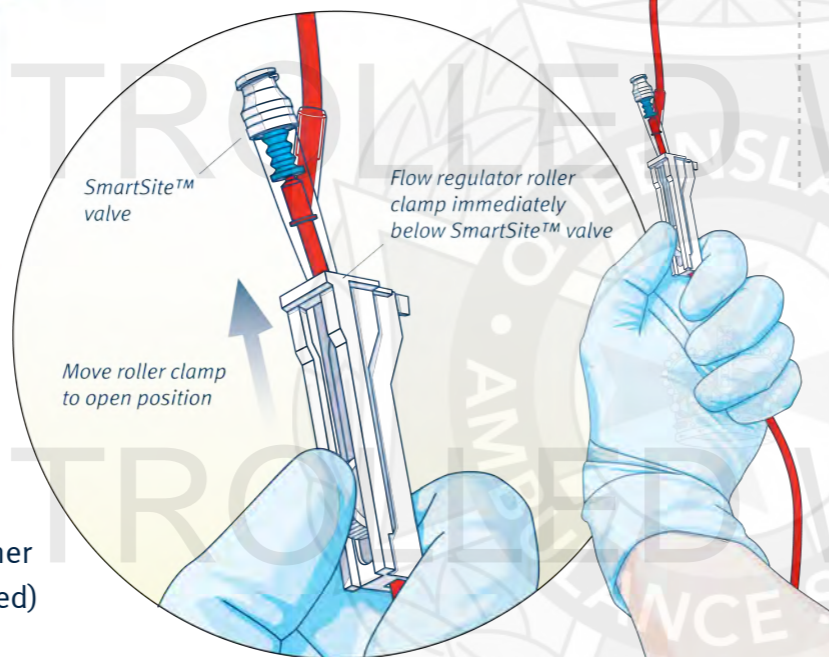
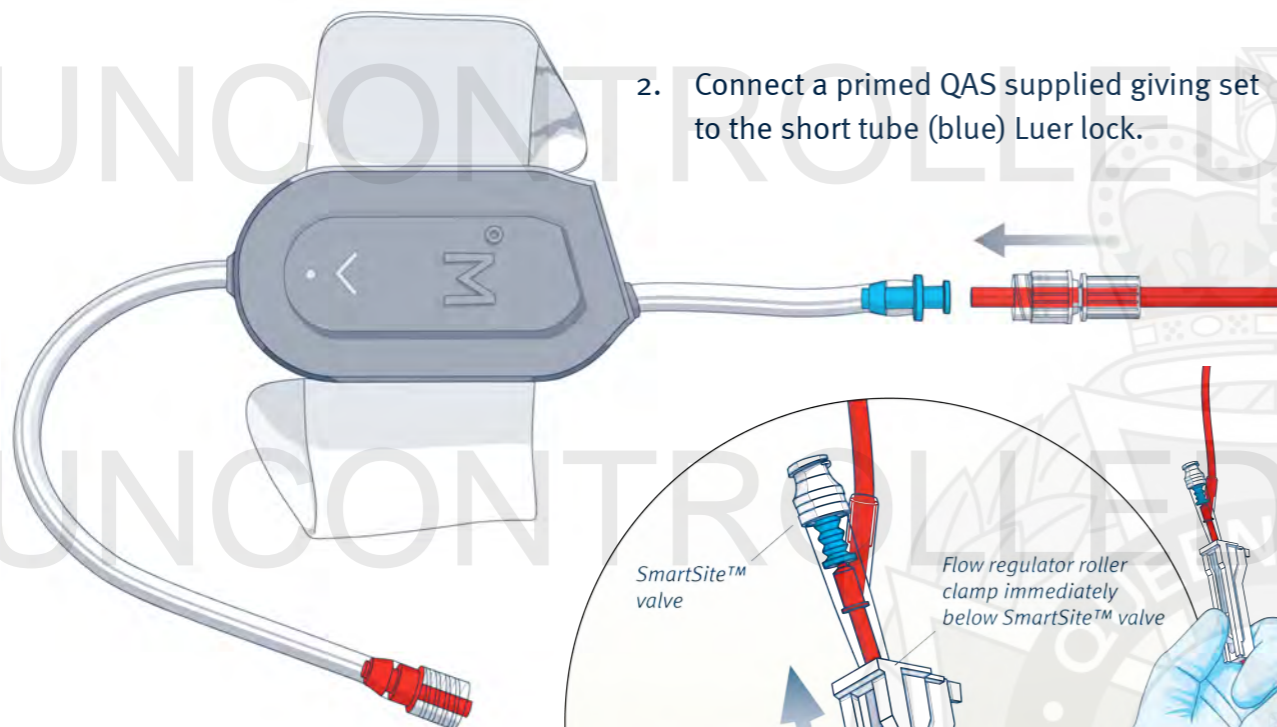
Complications

- Air embolism

Procedure – Blood warmer – °MEQU^[1]

1. Remove the °MEQU Warmer from the packaging. Remove the tamper proof seals and disconnect the Luer locks.

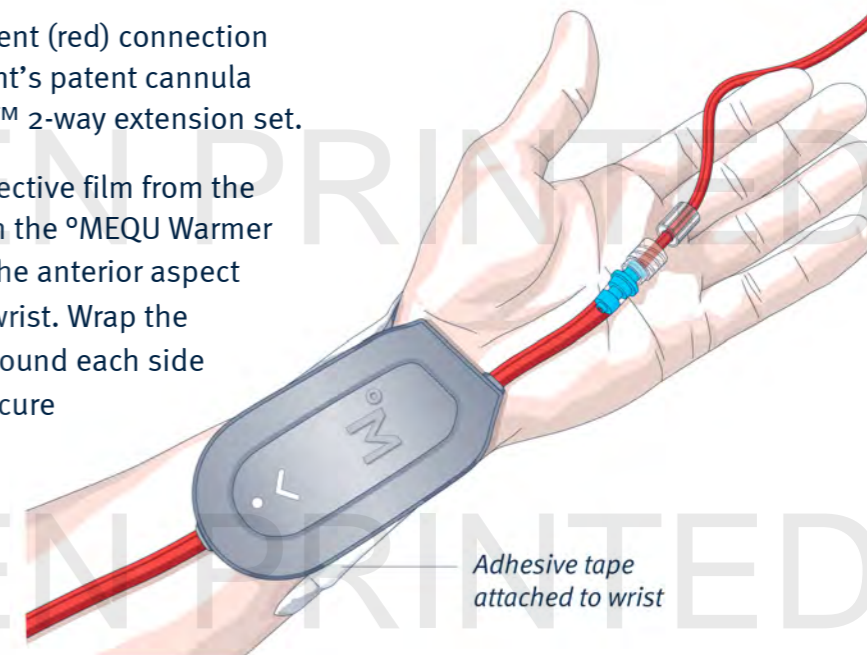
2. Connect a primed QAS supplied giving set to the short tube (blue) Luer lock.



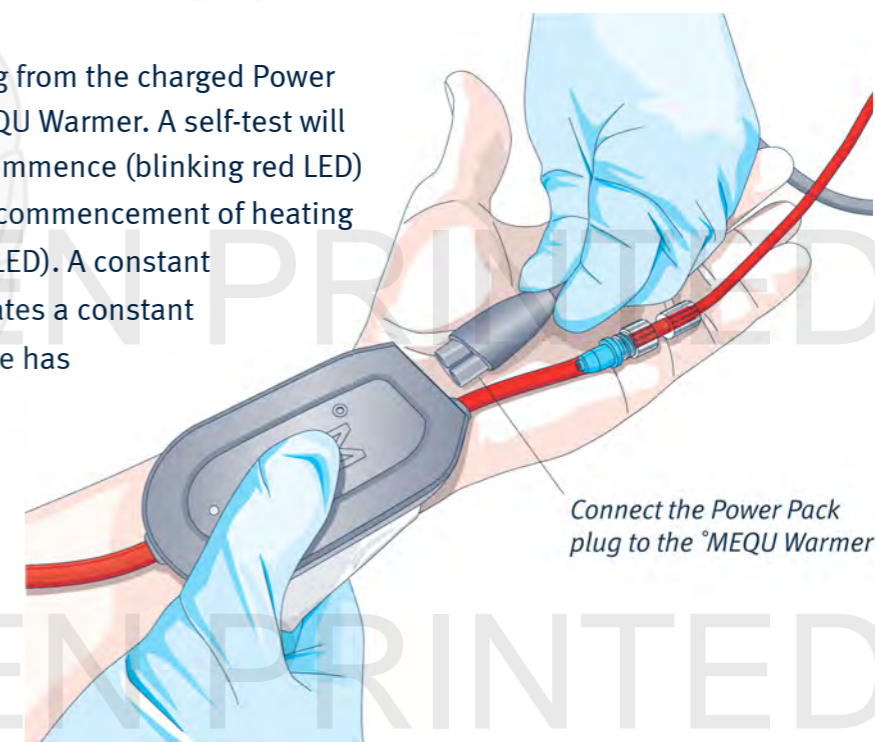
3. Open the giving set's roller clamp and slowly prime the °MEQU Warmer until fluid drips from the patient (red) connection port.
4. Inspect the °MEQU tubing to ensure no air bubbles are visible. If air bubbles are visible, briskly tap the tubing until all air bubbles are dislodged and clear.



5. Close the giving set's roller clamp.
6. Connect the patient (red) connection port to the patient's patent cannula or primed Alaris™ 2-way extension set.
7. Remove the protective film from the adhesive tape on the °MEQU Warmer and attach it to the anterior aspect of the patient's wrist. Wrap the adhesive tape around each side of the wrist to secure the warmer.



8. Connect the plug from the charged Power Pack to the °MEQU Warmer. A self-test will automatically commence (blinking red LED) followed by the commencement of heating (blinking green LED). A constant green LED indicates a constant fluid temperature has been reached.



9. Adjust the blood / blood product infusion rate as required.
10. Frequently monitor the infusion site for extravasation.

Additional information ^[1]

- A fully charged power pack will warm 1.5 litres of cold fluids to 39°C when administered at 150 mL/min.
- The state of battery charge can be displayed by pressing the battery LED button.
- When not in use the power pack and warmer must be stored disconnected to prevent the battery from discharging while in storage.
- Disconnecting the power pack from the °MEQU warmer will immediately cease fluid warming but have no effect on the fluid flow.
- The °MEQU device cannot be used during Magnetic Resonance Imaging.
- A flashing red LED on the °MEQU Warmer indicates overheating. Immediately stop use, disconnect the battery pack and arrange for servicing.
- The °MEQU Warmer is a disposable device, suitable for 72 hours of continuous operation on a single patient.
- °MEQU components (excluding the disposable °MEQU Warmer) must be cleaned and disinfected after each use – refer to the *QAS Infection Control Framework*.
- A pinch clamp is supplied the the °MEQU Warmer – not required for QAS use.
- Independent testing by the Danish Technical Institute confirmed there is no detectable concentration of aluminium in the fluid sample after passing through the °MEQU Warmer.^[2]

Charging of the power pack

- The power pack must be fully charged on delivery from the supplier and between each operational/training use. The charging time for a fully discharged battery to full charge is less than 2.5 hours. The power pack is unable to be operated while it is charging.

- In order to optimally maintain the charge between uses, the Power Pack will activate a ‘power save mode’ approximately 25 minutes after the Power Pack has been disconnected from the °MEQU Warmer or charger. If clinicians identify that the Power Pack remains in the ‘power save mode’ and does not commencing charging as intended, complete the following procedure:
 1. Connect a training/demo °MEQU Warmer to the Power Pack – the Power Pack will immediately exit sleep mode and can be connected to the charger to commence charging; **OR**
 2. Leave the charger unplugged from the wall socket for 15 minutes, connect the charger to the Power Pack and then plug in the charger to the wall socket – the Power Pack will then charge normally.

LED indicator interpretation table.

Green LED	Red LED	Status	Cause	Action
Off	Off	No heating	No power, or warmer is faulty	Check battery charge state and cable connection between the power pack and warmer
Flashing	Off	Warming up	Temp. < 35.5°C	Wait for target temperature to be reached (< 10 seconds)
On	Off	Temperature good	Temp. 35.5°C to < 43°C	Monitor infusion and warmer LEDs
Off	Flashing	No heating	Warmer has been stored at elevated temperature or the warmer is faulty	If this persists after cold blood and/or blood products are passed through the warmer, replace the warmer
N/A	On	No heating	Warmer is faulty	Replace the warmer