

Local Guideline



Health
Hunter New England
Local Health District

Nursing Management of Powerwand

Sites where Local Guideline and Procedure applies	John Hunter Children's Hospital
This Local Guideline and Procedure applies to:	
Adults	No
Children up to 16 years	Yes
	No
Neonates – less than 29 days	
Target audience	All clinical Staff

[Go to Procedure](#)

National Standard	1,4,5
Keywords	POWERWAND
Document registration number	JHCH 20.1
Replaces existing document?	No

Related Legislation, Australian Standard, NSW Ministry of Health Policy Directive or Guideline, National Safety and Quality Health Service Standard (NSQHSS) and/or other, HNE Health Document, Professional Guideline, Code of Practice or Ethics:

Clinical Procedure Safety

[NSW Health Policy PD 2005_406 Consent to Medical Treatment](#)

[NSW Health Policy Directive PD2017_013 Infection Prevention and Control Policy](#)

[NSW Health Policy Directive PD 2016_058 User applied labelling of injectable medicines, fluids, and lines](#)

[HNELHD Guideline and Procedure CVAD Intravenous Administration Set Change HNELHD GandP 16_19](#)

[HNELHD Policy Compliance Procedure Peripherally Inserted Central Catheters \(PICC\) Removal PD2011_060:PCP 2](#)

Local Guideline and Procedure note	This document reflects what is currently regarded as safe and appropriate practice. The guideline section does not replace the need for the application of clinical judgment in respect to each individual patient but the procedure/s require mandatory compliance. If staff believe that the procedure/s should not apply in a particular clinical situation they must seek advice from their unit manager/delegate and document the variance in the patients health record.
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Where necessary, the relevant Clinical Network or Stream should be consulted when developing this document.

Note: Over time links in this document may cease working. Where this occurs please source the document in the PPG Directory at: <http://ppg.hne.health.nsw.gov.au/>

PURPOSE AND RISKS (ESSENTIAL REQUIREMENT)

POWERWAND is a new device It looks like a cannula, but needs to be cared for like a Central Venous Access Device (CVAD).

The risks are infection and the device being cared for as a cannula.

These risks are minimised by:

- Staff utilizing Aseptic Non-touch Technique
- Policy and information available to staff as a resource
- Staff provided with education on the new device

Risk Category: Clinical Care & Patient Safety;

GLOSSARY

Acronym or Term	Definition
SPOC	Standard Paediatric Observation chart
CERS	Clinical Emergency Response System
CVAD	Central Venous Access Device
TPN	Total Parenteral Nutrition
IV	Intravenous
PPE	Personal Protective Equipment
HAIDET	Hand hygiene A cknowledge, I ntroduce, D uration, E xplanation, T hank you or closing comment
HR	Heart Rate
RR	Respiratory Rate
SpO2	Oxygen Saturation
BP	Blood Pressure

GUIDELINE

This Guideline does not replace the need for the application of clinical judgment in respect to each individual patient.

This guideline applies to POWERWAND 3F extended dwell catheters only.

INTRODUCTION

- POWERWAND 3F is an **extended dwell catheter** - technically a peripheral IV catheter
- Used for infusates **NOT** requiring central venous access
- Suitable for non-irritant medications (most antibiotics, blood products and heparin)
- Not suitable for TPN / Chemotherapy / Vasopressors
- Blood drawable
- X-ray confirmation of tip placement is NOT required
- **Catheter length:** 6cm
- **High flow:** 75ml/ min
- **Power injectable:** 8ml/ sec – 325psi
- **Dwell time:** 29 days

PROCEDURE

This procedure requires mandatory compliance.

CLINICAL PROCEDURE SAFETY LEVEL

Every clinician involved in the procedure is responsible for ensuring the processes for clinical procedure safety are followed. The following level applies to this procedure (click on the link for more information):

[Level 1 procedure](#)

STAFF PREPARATION

It is mandatory for staff to follow relevant: “Five moments of hand hygiene”, infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you or closing comment.

CARE/MAINTENANCE OF POWERWAND

- Flush using the **push / pause** technique
- NOT suitable for syringes less than 10ml
- If the POWERWAND is not connected to IV fluids, flush and lock at **least every 8 hours** - flush the line each shift & clamp before disconnecting the syringe 0.9% Sodium Chloride should be used to lock POWERWAND, unless otherwise ordered by a Medical Officer

- Securement Examples: GripLok® or StatLock® IV Premium

It is NOT recommended to obtain a blood pressure on the limb that the POWERWAND is inserted in

If extravasation occurs, it is recommended for the patient to receive an X-Ray for catheter tip location

POWERWAND INTRAVENOUS ADMINISTRATION SET CHANGE

Administration set and needleless connector needs to be changed every 96 hours

General: change if contaminated (e.g. precipitate, blood in set) or the integrity of the product is compromised

Blood products: change blood administration set every 12 hours IF continuing to transfuse OR with new IV fluids, with platelets or on completion of the transfusion, whichever comes first

http://intranet.hne.health.nsw.gov.au/_data/assets/pdf_file/00_06/138714/Flippin_Blood_ONLINE.pdf

This procedure requires mandatory compliance.

PATIENT PREPARATION

It is mandatory to ensure that the patient has received appropriate information to provide informed consent and, that patient identification, correct procedure and correct site process is completed prior to any procedure.

STAFF PREPARATION

It is mandatory for staff to follow relevant: "Five moments of hand hygiene", infection control, moving safely/safe manual handling, documentation practices and to use HAIDET for patient/carer communication: **H**and hygiene **A**cknowledge, **I**ntroduce, **D**uration, **E**xplanation, **T**hank you/**T**idy up/**T**ime or closing comment.

To be undertaken by clinical staff providing it is within the scope of practice of their role.

Note - Use aseptic non touch technique.

EQUIPMENT REQUIREMENTS

- Alcohol based hand rub and/or access to clinical hand wash basin
- Personal Protective Equipment (PPE)
- Sterile administration set for the infusion pump
- Standard IV giving sets
- Low absorption IV giving sets
- Blood pump set
- Isopropyl alcohol 70% swabs
- Prescribed IV fluids (new bag) or drug via syringe
- Add on devices i.e. burette/needleless connector
- Single patient use tape

- Appropriate label/s as per National Standards for user applied labelling for injectable medicines, fluids and lines
- Large alcohol wipes/neutral detergent

PROCEDURE STEPS

1. Cleanse hands with alcohol hand gel.
2. After verifying patient is due for IV administration set change, perform Level 1 Procedure pre-procedure safety check.
3. Explain the procedure to the patient including potential risks/complications and steps taken to reduce risk.
4. Gather equipment required for an intravenous administration set change and verify sterility of all sterile items (check expiry date / packaging).
5. Clean working surface with large alcohol wipe/neutral detergent and allow to dry before placing equipment on it.
6. Cleanse hands with alcohol hand gel, put on a pair of non-sterile gloves and protective eyewear.
7. Check the medication order first before priming the administration set.
8. Label the new line as described in the National Standard for user-applied Labelling of Injectable Medicines, Fluids and Lines.
9. Add any devices to the administration set then prime the giving set i.e. add needleless connector if replacing.
10. Close/engage all present clamps to minimise risk of air embolism or bleeding.
11. Disconnect old administration set and discard flask and giving set in general waste.
12. Ensure needleless connections are accessible.
13. Grasp the intravascular line pigtail with needleless connector.
14. If the needleless connector change due:
 - a. Scrub the Hub: Swab catheter hub **using friction / scrubbing technique** using at least two isopropyl alcohol 70% swabs separately and **allow to dry before adding new needleless connector.**
 - b. If needleless connector change not due, swab the exposed needleless connector using friction/scrubbing technique using at least two isopropyl alcohol 70% wipes separately and **allow to dry.**
15. Insert the administration set into the needleless connector or into the hub and secure using a twisting motion.
16. Unclamp closed clamp of POWERWAND lumen that IV administration set is attached to and recommence or start the infusion at the prescribed rate, checking with a qualified staff member the 5 rights of medication administration and verify that the line label is correct. Clamps on unused lumens should remain closed.
17. Counter-tape the set to prevent traction at the insertion site **using patient designated roll of tape or appropriate securement device.**
18. Dispose of equipment in appropriate waste.
19. Clean surface, cleanse hands with alcohol based hand rub and/or wash hands.
20. Ensure National Inpatient Medication Chart and or fluid chart is signed and fluid balance chart adjusted accordingly.
21. Document the procedure in the patient's health care record/ CVAD care plan (HSMR90).

OTHER CONSIDERATIONS:

1. Crystalloid solution containers (without drug additives) can be changed when the administration set or catheter is changed, or when the infusion is complete (Please note for paediatric patients, crystalloid containers need to be changed every 24 hours). Other infusion containers that include drug additives should be changed every 24 hours or as per manufacturers' guidelines.
2. A vented administration set shall be used for solutions supplied in glass or semi-rigid containers, and a non-vented administration set shall be used for plastic fluid containers.
3. The use of add-on devices for administration sets should be minimised as each device is a potential source of contamination, misuse, and disconnection; it is preferable to use an administration set with devices as an integral part of the set.
4. Two qualified clinicians must check intravenous fluids/medications. Refer to *Medicines Requiring a Double Check When Administered to Adults PD2013_073:PCP 9*, and *Safe Administration of Medications in JHCH Local Guideline and Procedure, JHCH 13.3*
5. An infusion pump should be used for all infusions via a central venous catheter unless in a specialty unit where the infusion will be monitored closely, for example during resuscitation. Also refer to HNELHD IV infusion pumps for examples of other infusion devices.
6. Luer lock connections must be used at all times.

DRESSING REQUIREMENTS AND DRESSING CHANGE

The sterile transparent semi-permeable dressing covering the POWERWAND insertion site must be changed every 7 days or sooner if:

- The dressing is no longer intact i.e. there is no longer a seal
- There is evidence of inflammation
- There is excessive accumulation of blood and or moisture under the dressing

Dressings (as above) should:

- Be positioned so the catheter insertion site is in the centre of the dressing
- Cover the catheter and create a complete seal from the insertion site to the catheter hub

PATIENT PREPARATION

It is mandatory to ensure that the patient has received appropriate information to provide informed consent and, that patient identification, correct procedure and correct site process is completed prior to any procedure.

EQUIPMENT REQUIREMENTS

- Alcohol based hand rub
- PPE
- Neutral detergent/Alcohol surface wipe for cleaning work surface
- Disposable bag for waste
- Anchoring Device (if required)
- IV Connector/s (if required)
- Transparent semipermeable dressing

- Swab stick/solution >0.5- 2% chlorhexidine in 70% - 80% alcohol (or Povidine-iodine 10% where chlorhexidine is contraindicated due to sensitivity or allergy)
- Dressing pack (if using >0.5- 2% chlorhexidine in 70% - 80% alcohol solution)
- Tape for counter taping

PROCEDURE STEPS

1. After verifying patient is due for dressing change, perform Level 1 Procedure pre-procedure safety check.
2. Explain the procedure to the patient including potential risks/complications and steps taken to reduce risk.
3. Position patient so as to optimize access to POWERWAND dressing whilst maintaining patient comfort and dignity.
4. Cleanse hands with alcohol hand gel.
5. Clean work surface with a neutral detergent/alcohol surface wipe.
6. Gather equipment required for dressing change and place on the trolley.
7. Open dressing pack on clean surface (if required as per above equipment list).
8. Cleanse hands with alcohol hand gel and put on a pair of non-sterile gloves.
9. If an anchoring device is present partially remove dressing to expose anchoring device and then replace (at all times ensure the POWERWAND is secured to prevent dislodgement when changing the anchoring device).
10. Remove old dressing without touching the insertion site. Always remove dressing starting distally and carefully work towards the insertion site to reduce the risk of accidental dislodgement of the catheter.
11. Discard dressing and non-sterile gloves appropriately into disposable waste bag.
12. Cleanse hands with alcohol hand gel and put on a pair of non-sterile gloves/sterile gloves if necessary.
13. Open swab stick packet and scrub the area with the swab stick $\geq 0.5\%$ - 2% chlorhexidine in 70% - 80% alcohol starting at the insertion site moving in a circular motion as you move from the centre out to beyond where the dressing edge will reside. Ensure to clean under the central venous catheter and the catheter itself. If necessary use another $\geq 0.5\%$ - 2% chlorhexidine in 70% - 80% alcohol swab stick until area clean.
14. Assess the appearance of the insertion site.
15. Allow the area to dry completely.
16. Apply the transparent semi permeable dressing as per manufactures instructions, using an aseptic non touch technique, covering the insertion site first and pinching off the dressing around the catheter.
17. Ensure the dressing is sealed on all sides.
18. Write when the dressing was changed on the dressing itself where possible.
19. Counter-tape the catheter or administration set avoiding the shoulder, to prevent traction and movement at the insertion site.
20. Dispose of equipment and clean trolley with Neutral detergent/alcohol surface wipe, cleanse hands with alcohol hand gel and document the procedure on CVAD Care plan (HSMR90)/flow chart.
21. Provide patient with education regarding future care of dressing if required.

OTHER CONSIDERATIONS

- POWERWAND insertion sites should be systematically assessed each shift and findings documented on the CVAD care plan (HSMR90)/Flow chart or patient's health care record. Pain,

induration, leakage, redness, swelling, pus, exudate or increase in temperature should be reported to medical staff.

- To prevent errors or breaches of asepsis, line and dressing changes should be performed when the clinician is unlikely to be interrupted
- The POWERWAND dressing should be covered with a plastic bag when the patient is showering or washing.
- Ensure IV connectors (if no IV administration sets connected) are changed using the 'Scrub the Hub' and non-touch aseptic techniques.
- Ensure that the POWERWAND is controlled and anchored at all times to eliminate migration in or out of the vein.

WITHDRAWING BLOOD FROM THE POWERWAND – SEE APPENDIX 1

Use a **light tourniquet** above the catheter tip for blood drawing

Draw back SLOWLY - too fast will collapse the vessel

There may be occasions where the catheter can't draw blood as it's positional: up against a valve or up against a wall

1. Prior to lab draws, flush the POWERWAND using a turbulent flush (push/pause) with 10ml 0.9% Sodium Chloride.
2. Dangle arm in gravity-dependent position with palm of hand facing upward, thumb out.
3. Slowly pull back on syringe (this helps prevent vessel collapsing)
4. Following lab draw, remove tourniquet and flush the POWERWAND using a turbulent flush (push/pause) with 10ml 0.9% Sodium Chloride and clamp before bottoming out the syringe.

IF NO BLOOD RETURNS:

1. Apply a tourniquet (if catheter is located in forearm, put tourniquet in upper arm; if catheter in upper arm, put tourniquet in axilla)
2. Gently apply distal pull on the catheter hub or downward traction below dressing (often it is positional and the catheter is up against a valve)
3. If still no blood return, Pull back to the 0.5 ml mark on your syringe and be prepared to maintain this negative pressure for a full 60 to 90 seconds. This will prevent vessel collapse and pull any fibrin which may have formed on the end of the catheter tip into the syringe.

If none of these tips work, don't give up on the line as long as it is flushing and working well you can continue to use. Often it is positional and we recommend checking for blood return next time you access the line, frequently it returns.

REMOVAL OF POWERWAND – SEE APPENDIX 2

- Never apply excessive force to remove the POWERWAND.
- Check allergies to all materials used including dressings, solutions and catheters.
- Removal of a POWERWAND must be ordered by a Medical Officer.
- The removal of a POWERWAND must be noted on the patient's CVAD Care Plan (HSMR90)/flow chart.

- The patient requires observations (SpO₂, RR, HR and BP) to be performed immediately after removal. Utilize SPOC or flow chart when documenting both baseline and post removal observations. Activate rapid response/CERS if required.
- The occlusive dressing is to be left intact for 1 week unless unable to visualise the insertion site or integrity of the dressing is compromised.

PATIENT PREPARATION

It is mandatory to ensure that the patient has received appropriate information to provide informed consent and, that patient identification, correct procedure and correct site process is completed prior to any procedure.

When performing procedures on paediatric patients, the principles of family centred care are to be followed. The following elements should be considered and implemented where appropriate:

- Child Life Therapy involvement (where available)
- Use of treatment room to ensure patients bed space remains “safe”
- Analgesia e.g. sucrose, paracetamol
- Age appropriate communication for the patient
- Distraction techniques
- Involvement of parent/carer

STAFF PREPARATION

It is mandatory for staff to follow;

- HAIDET for patient/carer communication
- Infection Control Policy
- Moving safely/safe manual handling
- Documentation practices

EQUIPMENT REQUIREMENTS

- Alcohol based hand rub
- PPE
- Sharps container
- Alcohol/Neutral detergent for cleaning trolley/surface where dressing pack and equipment is to be placed
- Disposable bag for waste
- Non sterile gloves
- Swab stick/or solution $\geq 0.5\%$ – 2% chlorhexidine in 70% - 80% alcohol for paediatric patients and $\geq 1\%$ Chlorhexidine in 70% - 80% alcohol for adult patients (see risk statement for acceptable alternative antiseptic solutions)
- Sterile dressing pack
- Sterile gauze x 1packet
- Airtight occlusive dressing (e.g. Island film) x 1
- Skin preps/Hypafix® for diaphoretic patients
- Tourniquet (in case of PICC breakage)

PRE-PROCEDURE

STOP and confirm the following before commencing the procedure:

- Patient identification using three core patient identifiers (Name – family and given names, date of birth and Medical Record Number - MRN)
- Procedure verification – procedure + site/side/level, where appropriate, matches consent
- Allergy/adverse reaction check
- Anticipated critical events
- Verbal consent to be obtained, written consent is not mandatory

PROCEDURE STEPS

1. Perform a Level 1 Procedure pre-procedure safety check. Verify correct patient and procedure.
2. HAIDET - Explain the procedure to the patient including potential risks/complications.
3. Wash/gel hands.
4. Gather equipment.
5. Don safety glasses.
6. Wash/gel hands.
7. Turn off and disconnect infusion lines from pump if the catheter is not capped.
8. Wash/gel hands, don non-sterile gloves.
9. Remove the old dressing peeling towards insertion site and without touching the insertion site, disposing of dressing and gloves in garbage bag.
10. Wash/gel hands, don clean non-sterile gloves.
11. If gross soiling visible, first clean site with 0.9% Sodium Chloride soaked gauze, working in a circular motion from insertion site out.
12. Open swab stick packet (or if not available, use chlorhexidine solution $\geq 0.5\%$ -2.0% in 70% - 80% alcohol or alternative and gauze) and scrub the area with the swab stick (or solution using sterile gauze) using a firm circular motion, starting at the insertion site and moving out for a total area of 10cms. Ensure to clean under POWERWAND. If necessary, use another Chlorhexidine impregnated swab stick/sterile gauze until area clean.
13. Allow the area to dry. For a diaphoretic patient apply skin preps around where the edge of the dressing will stick to ensure adherence.
14. Ensure air tight dressing is ready to apply before removing POWERWAND.
15. Remove the Statlock/anchoring device.
16. Have a piece of sterile gauze ready near insertion site.
17. As the anchoring device is being removed, Grasp the POWERWAND close to the insertion site and slowly pull the catheter out enough to grasp pulling parallel to the skin using hand over hand technique.

Do not apply force to the line or apply pressure directly over the insertion site until the POWERWAND has been completely removed as this may cause the catheter to break.

If any resistance is felt whilst removing the POWERWAND line STOP, POWERWAND lines can become stuck due to vasospasm. If this occurs, reassure the patient, reposition the arm and try again.

- If unsuccessful, secure the POWERWAND and apply a warm compress to the arm for 15 – 20 minutes (regularly check skin to avoid burns) and talk the patient through a relaxation technique such as controlled breathing before reattempting removal.

- If removal is still unsuccessful, contact the Medical Officer or intravenous specialist.
18. Once POWERWAND is completely removed, immediately apply digital pressure over the insertion site until haemostasis is achieved using sterile gauze.
 19. Check patient for signs of bleeding. If bleeding is evident, pressure will have to be maintained for longer.
 20. Apply occlusive dressing to the insertion site after haemostasis is achieved and ensure it is sealed on all sides. The dressing is to remain intact 1 week.

POST PROCEDURE

- Document procedure in patient's health care record or Radiology Information System
- Provide advice for clinical handover to staff caring for patient
- Label specimen/images correctly
- Arrange post procedure tests where clinically relevant

IMPLEMENTATION, MONITORING COMPLIANCE AND AUDIT

This document will be available on the HNELHD Intranet Policy, Procedure and Guideline Directory In-services attended by the POWERWAND Access Scientific Rep arranged by the paediatric Nurse Educators.

Ongoing monitoring will occur through IIMS by NUMs

Audits will include device audits and documentation audits via annual QARS.

CONSULTATION

JHH Anaesthetists: Kim Rackermann, Pat Farrell

DIVA Committee

Infection Prevention and Control

Peter Cocking: CNC IV/Central Lines

Jessica Ball: Acting CNC – Paediatric Respiratory

CPGAG

APPROVAL

CPGAG – December 2018

CQ&PCC – March 2019

REFERENCES

www.msa.com.au

<http://accessscientific.com/powerwand/>

FEEDBACK

Any feedback on this document should be sent to the Contact Officer listed on the front page.

APPENDICES

APPENDIX 1 -

**UNDISPUTED
BEST IN CLASS**



MSA
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SPECIALTIES
AUSTRALASIA

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CARE & MAINTENANCE
A Recommended Protocol

BLOOD SAMPLING from the POWERWAND

1 Apply tourniquet at axillary line

2 Dangle arm with palm up

3 Aspirate gently with 10mL syringe





If blood fails to return, change needle-free connector. Repeat.

FLUSHING and LOCKING the POWERWAND

4 Flush with preservative-free 0.9% normal saline

5 Flush using 10mL syringe: Push (2mL) – Pause – Push (2mL), etc.

6 Flush and lock at least every 8 hours





Follow manufacturer's directions for flushing/locking needle-free connectors.

POWERWAND DRESSING CHANGES:
Change POWERWAND dressing and stabilization device at least every 7 days, or sooner if soiled, moist or loosened.

POWERWAND DISCONTINUATION:
Remove POWERWAND in accordance to institutional policies and procedures, taking care to avoid bleeding and risk of air embolism.

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LC-0200 Rev C

PWD1028-11/2017

APPENDIX 2



A Recommended Protocol

FLUSHING AND LOCKING THE POWERWAND®

- Flush using PUSH/PAUSE technique: Push 2cc - Pause - Push 2cc—Pause, etc. (Figure 1)
- Always use 10cc syringe, or larger, filled with preservative-free 0.9% sodium chloride
- Flush and lock at least every 8 hours
- **IMPROPER FLUSHING OF NEEDLE-FREE CONNECTORS CAN LEAD TO THROMBOTIC OCCLUSIONS:**
 - Be aware of manufacturer's instructions for use of needle-free connectors
 - Follow appropriate policy and procedures for flushing and clamping sequencing (Figure 2)



BLOOD SAMPLING FROM THE POWERWAND®

- Prior to blood sampling, stop infusion, and then FLUSH The POWERWAND® (as above)
- Perform Kamps' Maneuver:
 - Dangle arm in gravity-dependent position WITH PALM OF HAND FACING UPWARD
 - Pump fist
 - Attach syringe and GENTLY WITHDRAW BLOOD (Figure 3)

If no blood returns:

- Apply light TOURNIQUET
- Repeat Kamps' Maneuver (Figure 4)

HELPFUL HINTS:

- Gently tighten skin distal to (below) StatLock® stabilization device.
- Gently apply traction to StatLock® PI extension tubing.
- Apply gentle pressure over area of POWERWAND® catheter tip




POWERWAND® DRESSING CHANGES

- Change POWERWAND® dressing and StatLock® stabilization device at least every 7 days or sooner if dressing becomes loosened, soiled or moist
- Use sterile technique
- Be certain new StatLock® PI extension set and accompanying needle-free valve-if attached—are primed using preservative-free 0.9% sodium chloride. (Note: The StatLock® anchor pad will only engage properly with StatLock® PI extension set)
- During extension set change-out, take precautions to limit blood loss and risk of air entry. For example:
 - Apply digital pressure to occlude vessel just proximal to catheter tip (Figures 5&6)
 - Position patient properly




DISCONTINUING THE POWERWAND®

- First, remove StatLock® anchor pad using alcohol (per manufacturer's directions for use) (Figure 7)
- Remove POWERWAND® extended-dwell catheter WHILE APPLYING DIGITAL PRESSURE UNTIL HEMOSTASIS IS ACHIEVED
- Then, apply petroleum-based ointment and a sterile dressing to seal skin-to-vein tract, TO REDUCE RISK OF AIR EMBOLISM (Figure 8)




IMPORTANT: Always adhere to institutional Policy & Procedures, INS Standards and CDC Guidelines during care and maintenance of a vascular access device.

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