
**Transducer
Set – Up, Maintenance and Blood Sampling for All Pressure Monitoring
Systems
Level, Zero and Trouble Shooting**

Purpose:

To accurately and safely obtain hemodynamic parameters.

Policy:

1. Setting up and maintenance of transducers will be done by supervised nursing students, or registered nurses.
2. Leveling and zeroing transducers shall be done prior to the insertion of the catheter; beginning of every of every shift; and anytime there is a question regarding the correct level of the transducer.
3. Transducer tubing and flush bags are changed at least every 96 hours

Equipment:

Disposable Pressure Monitoring Kit

Dual Pressure Monitoring Lines (used for PA catheters)

Venous Arterial Blood Management Protection System (VAMP): used for pressure lines that will be accessed frequently for blood draws.

500 cc Normal Saline (may use 1000cc if frequent flushes or blood collection)

Pressure Module

Transducer Cable

Pressure Bag - 500 cc (use 1000cc pressure bags with 1000cc flush)

Procedure:

| Responsible Party | Action | Rational |
|--------------------------|--|---|
| MD, RN | <ol style="list-style-type: none">1. Wash hands with antimicrobial solution.2. Spike the fluid with tubing.3. Remove access air from flush bag4. Flush lines. Transducers shall be flushed prior to pressurization. | <ol style="list-style-type: none">1. Helps reduce spread of microorganisms.2. Provided in pressure monitoring kit. Use a VAMP for any pressure line that will be accessed for frequent blood draws.3. Prevents air from entering line4. Pressurizing a fluid causes the fluid to go to a gas state when in a |

turbulent environment.
This causes under –
dampening.

5. Connect line to flush port of transducer.
6. Flush complete tubing by pulling on rubber flush device.
7. Flush all stopcocks replacing white caps on the ports with blue caps.
7. White caps are vented to air. Caps must be replaced to prevent contamination and fluid leakage.
6. Place NS bag into the pressure bag.
7. Inflate pressure bag to 300 mm Hg.
8. Connect transducer cable to appropriate pressure module.
9. Connect transducer cable to disposable transducer.
10. Label parameter to be monitored.
11. Arterial, PA, & CVP.
11. Level the transducer. Place transducer at the level of the phlebostatic axis. The nurse may place an electrode at the site for future verification.
12. This allows the transducer to be level of right atrium.
12. Use stopcock closest to transducer. Turn stopcock off to patient. Remove blue cap.
13. Press “zero” on the monitor.
14. Replace blue cap on stopcock.

Venous Arterial Blood Management Protection System (VAMP/ VAMP Jr)

Purpose:

To provide access for venous and arterial blood sampling with greater safety and facility, less blood waste, and less potential for infection.

Policy:

1. VAMP may be used in arterial and central venous lines when frequent blood sampling is expected.

Equipment:

VAMP
Nonsterile gloves

Responsible Party:

RN, RN App, Student Nurse, Medical Student, or MD.

Action:

Set-up

1. Primes transducer as above.
2. Orient the reservoir to a 45 degree angle such that the sampling port is above the reservoir.
3. Gently squeeze and hold the plunger flexures together, thus creating a small space under the plunger.
4. Deliver the flush solution slowly through the system, maintaining a 45 degree angle to reduce air bubbles.
5. When VAMP flush is complete, release the flexures.

Sampling

1. Glove, gently squeeze flexures together and smoothly draw reservoir up over 3-5 seconds, until plunger stops and the reservoir is filled with blood.
2. Blood should not remain in the reservoir longer than 3 minutes.
3. Close the shut-off valve by turning the handle perpendicular to the tubing.
4. Swab the sample port with alcohol or chlorohexidine.
5. Sampling should be performed using a blunt (needleless) needles or protected needles, with a syringe or direct draw unit.
6. Aspirate an appropriate amount of blood from the sampling port, drawing the sample for coagulation studies last.
7. Open shut-off valve by turning handle parallel to the tubing.
8. Depress the center of the handle, clearing the reservoir over 3-5 seconds, until the flexures lock into place.
9. Swab the sampling port and flush the line until clear.
10. Transfer blood samples into appropriate lab vacuum tubes and label immediately.
11. Dispose of all used equipment in the needle box or a contaminated box if no sharps are involved.

References:

1. Chulay, M. & Burns, S. (2006). AACN: Essentials of Critical Care Nursing.
2. www.edwards.com/education
3. Wiegand, D & Carlson, K. (2005). AACN: Procedure Manual for Critical Care.

Transducers

Critical Care

P R E S S U R E M O N I T O R I N G S Y S T E M S

TruWave Transducer Troubleshooting Guide

| PROBLEM | CAUSE | PREVENTION | INTERVENTION |
|---|---|---|--|
| 1. No waveform on monitor | Transducer not open to catheter. | Check stopcocks for proper position. | Check and correct stopcock position. |
| | Setting on bedside monitor incorrect – on-cal, zero, or off. | Use correct setting on bedside monitor. | Check scale setting and monitor setup. |
| | Catheter clotted. | Maintain continuous flush. | Aspirate blood clot. Do not irrigate. |
| | Faulty transducer. | | Check function of transducer with mercury, water manometer, or TruCal. Change transducer, if necessary. |
| 2. Damped waveform | Improper scale selection. | | Change to proper scale. |
| | Air bubbles in tubing. | Flush system to gravity. Remove air bubbles during pressure monitoring setup. | Flush air bubbles from system. |
| | Blood clot partially occluding catheter tip. | Maintain continuous flush with heparinized solution. | Aspirate clot with syringe and flush with heparinized solution. |
| | Forward migration of catheter. Catheter tip occluded by balloon or vessel wall. | | Reposition patient. Have patient cough and deep breathe. Reposition catheter by rotating or pulling back while observing waveform. |
| | Leak in setup. | Tighten all connections and stopcocks before use. | Tighten any loose connections. Change faulty flush device, etc. |
| | Pressure bag not inflated to 300 mmHg. | Inflate pressure bag to 300 mmHg. | Reinflate pressure bag. Replace bag if faulty. |
| 3. False low measurement | Transducer level too high. | Check level periodically. Level air-fluid interface of stopcock closest to transducer to phlebostatic axis. | Re-level transducer air-fluid interface to phlebostatic axis. |
| | Improper zeroing. | Check monitor settings. Observe waveforms closely. Do square wave test once a shift. | Re-zero monitor. |
| 4. False high measurement | Transducer level too low. | Check level periodically. Level air-fluid interface of stopcock closest to transducer to phlebostatic axis. | Re-level transducer air-fluid interface to phlebostatic axis. |
| | Improper zeroing. | Check monitor settings. Observe waveforms closely. Do square wave test once a shift. | Re-zero monitor. |
| | Ringing. | Excess tubing length. | Use shortest tubing length possible (3 – 4 ft.). |
| 5. Change in configuration of waveform (noisy or erratic tracings) | Incorrect catheter position. | | Reposition patient. Obtain chest x-ray. Reposition catheter, if necessary. |
| | Loose connections in catheter | | Tighten loose connections |

P R E S S U R E M O N I T O R I N G S Y S T E M S
TruWave Transducer Troubleshooting Guide

| PROBLEM | CAUSE | PREVENTION | INTERVENTION |
|---|---|--|--|
| 6. Catheter fling/whip in waveform | Excessive movement of catheter. | Correct catheter placement in pulmonary artery. | Catheter may require repositioning. |
| | Excessive stopcock usage. | Limit number of stopcocks. | Eliminate excess stopcocks. |
| 7. Bleedback into tubing or transducer | Loose connections. | Return stopcocks to proper position after use. | Replace transducer if contaminated with blood. Tighten connectors. |
| | Pressure bag below 300 mmHg. | Keep pressure bag inflated to 300 mmHg. | |
| 8. Sepsis | Organisms introduced into bloodstream. | | Remove catheter as ordered. Antibiotics as ordered. |
| | Poor sterile technique setup and maintenance. | Use aseptic technique when inserting catheter. Use aseptic technique when drawing blood samples. Maintain closed system. | Remove catheter as ordered. Antibiotics as ordered. |
| | Prolonged catheter use. | Remove catheter after 72 hours. | Remove catheter as ordered. Antibiotics as ordered. |
| | Bacterial growth in IV fluid. | Change IV fluid according to unit policy. | Remove catheter as ordered. Antibiotics as ordered. |
| | | Use sterile deadender caps on all stopcock parts. | Remove catheter as ordered. Antibiotics as ordered. |
| | | Flush blood from stopcocks after blood sampling. | Remove catheter as ordered. Antibiotics as ordered. |



Certified according to European MDD

See package insert for full prescribing information.

Edwards Lifesciences, Edwards, and the stylized E logo are trademarks of Edwards Lifesciences Corporation. TruWave is a trademark of Edwards Lifesciences Corporation and is registered in the U.S. Patent and Trademark Office.

This product is manufactured and sold under one or more of the following United States Patents: U.S. Patent No. 4,576,181; 4,610,256; RE 33,513; 5,564,951; 5,803,770; and corresponding foreign patents.

Caution: Federal (USA) law restricts this device to sale by or on the order of a physician.

©Copyright 2002 Edwards Lifesciences LLC
 All rights reserved. 3176-1/02-CC