Pulmonary Artery Catheter Practice Guidelines

Definition: Measurement of hemodynamic parameters to assess cardiac function through clinical intervention, mechanical assist devices, and vasoactive medications

Goal: Maintain optimal cardiac function and organ perfusion

Clinical Presentation	**Assessment and Monitoring**	**Interventions**	**Documentation/Rationale**
Cardiogenic shock CHF evaluation/ management Heart transplantation evaluation Pulmonary Hypertension workup/management	Initial setup	Mark patient's right phlebostatic axis with permanent marker, cover with clear dressing	Mark patient's right phlebostatic axis with permanent marker, cover with clear dressing
		Prime monitoring setup, time/date	Time/date tubing, change Q96 hours to assist with infection prevention
		Zero transducer to atmospheric pressure at time of initial setup	
		Maintain patency of PA/CVP port via flush bag (300mmHg) and change q96hr. Infuse KVO flush in Cordis & remaining unused ports	
		Ensure continuous PA waveform monitoring	Document alarm parameters Q shift on flowsheet
		Set PAS Low limit 5 above the PAD	To detect potential spontaneous wedge position
		Assess the measurement of the PA catheter exit at the cordis at the time of placement/secure the swandom in place to the catheter	Document the placement & position of the catheter in the electronic POC log
	Nursing assessment	Post insertion, confirm line placement with CXR & MD verification prior to use for infusion. Document name of confirming MD	Document name of confirming MD

		Level the transducer at the marked phlebostatic axis	Document angle of patient's position
		Square wave test Q12 hours,	Note abnormal results. Refer to learning module for instruction.
	PA parameters: PAS, PAD, CVP	Perform PA catheter readings Q 4 hours,(PAS/PAD, CVP,PCWP)	Document PAS, PAD, PAM, PCWP, and CVP on flowsheet Q 4 hours with VS (T, P, R, and BP).
	MEAN	Calculate PAM=[(PAS-PAD)] /3 + PAD	Vital signs, PA readings pre & post intervention/drug titration then q 4hr when stable
	PCWP	Inflate balloon until PCWP waveform but with no more than 1.5cc of air**. DO NOT WEDGE if PAS ≥60mmHg (**allow air to passively expel from syringe then replace empty syringe and close stopcock gate valve valve)	Report any difficulties with inflation when obtaining PAWP to prevent potential patient injury
	Cardiac Output, Cardiac Index.	Perform thermodilution CO, CI using iced saline Q 4 hours. Inject 10ml of fluid via CVP port of catheter. Trial of 3 and take average of those within 1liter	Document CO/CI/SVR/PVR **must coincide with full set of vital signs & PA pressures** to enhance assessment of patient condition
		Fick Calculations only if ordered by MD [Frequency Q4, Q8, or Q12 hour intervals to coincide with Q4 hour vital signs] **Must obtain full set of vital signs, PA & CVP pressures at time of each FICK calculation.**	Document calculated FICK cardiac output, index, SVR, PVR in order to enhance assessment of patient condition
		Graph all waveforms and read at end-expiration	Keep initial waveforms in bedside chart. Retain graphed waveforms for 24hr. Refer to unit teaching module or pacep.org for waveform evaluation

		Assess catheter site/position Q shift or with any changes/adjustments Site care per central IV site care policy (Q 7 days biopatch, Q 24 hours gauze or if moist or detached)	Document site/position on flowsheet Q shift or with any changes/adjustments Document dressing change time/date on dressing & on flowsheet
Lab values		SVO2 sample via PA (yellow) port to accompany MD order for FICK cardiac output Hgb QD with am labs(for use with FICK, CCO cardiac output)	Document Hgb & BSA used for FICK calculations on flow sheet **Use daily weight for BSA**
Devices	Thermo dilution method (keep fluid iced) Continuous Cardiac Output Fick CO (for cases of severe heart failure)	Enter constant into monitor. Inject 10cc of iced saline via CVP port of catheter. Trial of 3 and take average within 1 liter. Perform Q4 hours Ensure proper calibration of machine using daily Hgb, SVO2 Obtain SVO2/SpO2% only if FICK ordered by MD. **Must obtain full set of vital signs at time of above lab collection for FICK calculation**	Document CO/CI/SVR/PVR Q 4hr Document SVO2/H&H/BSA Q24h. Provides more information to enhance patient assessment
Diagnostic Test	CXR	Verify placement and maintain position of catheter	Document placement & position of catheter at time of insertion on electronic patient log

Resources:

Bridges, E. (2009, January). *AACN Practice Alert/pulmonary artery/central venous pressure measurement*. Retrieved April 1, 2010, from American Association Critical Care Nurses Web Site: http://AACN.org

Scales, K., & Colle, E. (2007). A practical guide to using pulmonary artery catheters. *Nursing Standard, 21*(43), 42-48.

Halm, M. A. (2008). Flushing hemodynamic catheters: what does the science tell us? *American Journal of Critical Care, 17*(1), 73-76.

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