

EVIDENCE-BASED PRACTICE (EBP) GUIDELINE
BP ASSESSMENT IN SELECTED POPULATIONS

ARTERIOVENOUS FISTULAS OR GRAFTS

Review of Evidence

No primary studies were found that investigated the safety of taking BP on an extremity with an arteriovenous fistula or graft. Several national organizations have published statements advising health care providers from taking BPs on these extremities.

LEVEL OF EVIDENCE = **Class III (based on expert opinion evidence)**

EBP Recommendation

A. Health care providers should not assess BP on an extremity with an arteriovenous fistula or graft.

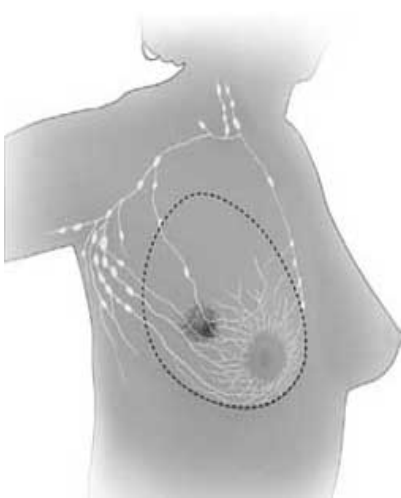
References:

1. American Association of Critical Care Nurses' Practice Alert: Noninvasive BP Monitoring. AACN Protocols for Practice
2. Intravenous Nurses Society "Arteriovenous fistulas and hemodialysis catheters". *J of Infusion Nursing*; 2006; 29: S46-S47.
3. National Kidney Foundation/Dialysis Outcomes Quality Initiative. Clinical practice guidelines for vascular access. *Am J Kidney Disease*; 2001; 37: S137-S181.

MASTECTOMY PATIENTS

Review of Evidence

No primary studies were found that investigated the safety of taking BP on the side of a mastectomy surgery. Furthermore, no studies were found that demonstrate taking BP on the surgical side leads to the development or exacerbation of lymphedema.



With breast cancer surgery, removing lymph nodes and vessels from the underarm changes the way lymph fluid flows within that side of the upper body and circulates to other parts of the body. If the remaining lymph vessels cannot remove enough of the fluid in the breast and underarm area, excess fluid builds up and causes lymphedema. Usually, lymphedema develops slowly over time. The swelling can range from mild to severe, and it can develop soon after surgery or radiation treatment. But it can also develop months or even years later. Once lymphedema has started, it cannot be cured. Early and careful management can reduce symptoms and keep the condition from getting worse. Women who have many lymph nodes removed and those who have radiation therapy to the underarm area tend to have a higher risk of developing lymphedema. As breast surgery and treatment becomes more conservative, fewer women are expected to develop lymphedema. (From: www.cancer.org).

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Risk of Lymphedema based on type of surgery:

<i>Type of Surgery</i>	<i>Lymphedema Risk</i>	<i>General BP Recommendation</i>
RADICAL (AXILLARY) Removal of breast, underlying muscles and all of lymph nodes under arm	◇ High	Patients warned to avoid constriction of affected arm, such as BP & venipunctures.
MODIFIED (Sentinel Node) Typical breast cancer surgery performed today. Removes only sentinel nodes (those closest to tumor).	◇ Uncommon ◇ If swelling occurs, typically mild & short-term and resolves within a year of surgery.	Constriction of arm is unlikely to cause lymphedema in these patients. Therefore, BP readings are safe on side of surgery. *See recommendation below
BILATERAL (or patient with AV Shunt/VAD on opposite side of mastectomy)	◇ Varies (if radical or modified)	Take BP on leg, or on side with less extensive surgery (unless AV shunt/VAD present).

In relation to BP, expert opinion has emphasized pathophysiologic rationale. Historically, it has been advocated that the small area of constriction involved with BP monitoring creates a tourniquet effect that can cause further damage to already fragile lymphatics and blood vessels thereby, worsening lymphedema. More recently, some physicians ² have argued that BP monitoring should cause no harm because pressure is used to treat the syndrome. [Compression is one of the mainstays of management to mobilize lymph fluid for symptomatic lymphedema. Compression therapy may include multilayer bandaging, massage, custom-made elastic stockings (exert 40 mm Hg), graduated compression garments (exert up to 80 mmHg), or pneumatic pumps (exert up to 150 mmHg).] Therefore, these physicians advocate that “sporadic BP readings should not cause injury. In fact the pressure applied by the BP cuff may potentially improve lymph drainage proximal to the site of application”.^{2, pp. 29058-2058} However, such pressure is not applied uniformly to the extremity as with graded compression, a therapy that starts at the fingers and extends to the deltoid area to evacuate excess protein rich fluid.

LEVEL OF EVIDENCE = Class III (based on expert opinion evidence)

Expert opinion is mixed. Theory-based recommendation errs on the conservative side and using unaffected arm.

EBP Recommendation

Health care providers should avoid taking BP on the surgical side, or arm affected with lymphedema, *whenever possible*. See further discussion based on type of surgery above.

References

1. American Association of Critical Care Nurses’ Practice Alert: Noninvasive BP Monitoring. AACN *Protocols for Practice*.
2. Greene A, Borud L, Slavin S. (2005). Blood pressure monitoring and venipuncture in the lymphedematous extremity. *Plastic & Reconstructive Surgery*; 116: 2058-2059.
3. Harris S, Hugi M, Olivotto I. Et al. Clinical practice guidelines for the care and treatment of breast cancer: 11. Lymphedema. *Canadian Medical Association J*; 164: 191-199.
4. Horan D, & McMullen M. Assessment and management of the woman with lymphedema after breast cancer. *J American Academy of Nurse Practitioners*. 10: 155-159.

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5. Lymphedema: What every women with breast cancer should know. www.cancer.org. Accessed 12/16/2006.
6. Lymphedema Prevention. OncoLink. www.oncolink.org/experts. Accessed 12/16/2006.
7. Mastectomy: Is it safe to have blood pressure taken on the side of surgery? www.MayoClinic.com. Accessed 12/16/2006.
8. Morrell R, Halyard M, Schild S. Breast-cancer related lymphedema. *Mayo Clinic Proceedings*. 2005; 80: 1480-1484.
9. O'Connor P. Lymphedema: No blood tests, blood pressure, I.V. or injections into this arm! www.abcn.ca. Accessed 12/16/2006.
10. Price J, & Purtell J. Prevention and treatment of lymphedema after breast cancer. *AJN*; 97” 34-37.
11. Runowicz C. Lymphedema: Patient and provider education. *Cancer Supplement*. 1998; 83: 2874-2876.
12. Thiadens S. Lymphedema risk-reduction practices. National Lymphedema Network. www.lymphnet.org. Accessed 12/16/2006.

LEVELS OF EVIDENCE

Class of EBP Recommendation	Criteria	Clinical Definition
Class I Definitely recommended	Supported by excellent evidence, with at least 1 prospective randomized, controlled trial.	Class I interventions are always acceptable, safe & effective. Considered definitive standard of care
Class IIa Acceptable & useful	Supported by good to very good evidence. Weight of evidence and expert opinion strongly in favor.	Class IIa interventions are acceptable, safe & useful. Considered intervention of choice by majority of experts.
Class IIb Acceptable & useful	Supported by fair to good evidence. Weight of evidence and expert opinion not strongly in favor.	Class IIb interventions are also acceptable, safe and useful. Considered optional or alternative interventions by majority of experts.
Indeterminate Promising, evidence lacking, immature	Preliminary research stage. Evidence: No harm but no benefit. Evidence insufficient to support a final class decision.	Indeterminate : Describes treatments of promise but limited evidence.
Class III May be harmful; no benefit documented	Not acceptable, not useful, may be harmful.	Class III refers to interventions with no evidence of any benefit; often some evidence of harm