

## Answers to Your Questions

### Q. What is the sentinel lymph node?

**A.** The sentinel lymph node is the first node(s) in the body to come in contact with the cancer cells as they leave the primary tumor in the breast and start to spin off or spread into the rest of the body's tissues.

### Q. What are the benefits of sentinel lymph node biopsy?

**A.** Removing only the sentinel node allows the pathologist (a physician specializing in the study of disease) to closely examine the specimen, aiding in the detection of cancer. There is typically a smaller incision, which may result in shorter recovery time and less post-operative pain than axillary lymph node dissection.

### Q. Who is a candidate for sentinel lymph node biopsy?

**A.** Women who have undergone a breast biopsy and have been diagnosed with invasive breast cancer should ask their doctor if sentinel lymph node biopsy is an appropriate alternative to axillary lymph node dissection for them.

### Q. Who is not a candidate for sentinel lymph node biopsy?

**A.** Patients who have obviously-cancerous lymph nodes should have a complete axillary node dissection, as it is good to remove as much obvious cancerous tissue as is accessible to the surgeon. Patients who have had large "open surgical" biopsies or lumpectomies are not good candidates, as these surgical procedures could disrupt the lymphatic circulation from the breast into the underarm, making the sentinel node difficult to find. Patients with large tumors should discuss with their doctor whether to have chemotherapy prior to any definitive treatment of the breast or axillary area.

## Commonly Used Terms

**Axillary** — Pertaining to the area under the arm, including the lymph nodes.

**Benign** — Non-cancerous.

**False Negative** — Test indicates that the area is "normal" even though cancer is really there.

**Invasive Cancer** — Cancer that has spread to nearby tissue. Invasive cancer is also called infiltrating cancer or infiltrating carcinoma.

**Lymphedema** — A condition in which excess fluid collects in tissue and causes swelling. It may occur in the arm after lymph vessels or lymph nodes in the underarm are removed.

**Lymph Nodes** — Small, bean-shaped structures found in the body that trap and remove cell waste and help fight infections. They are often examined to determine if cancer has spread.

**Malignant** — Cancerous.

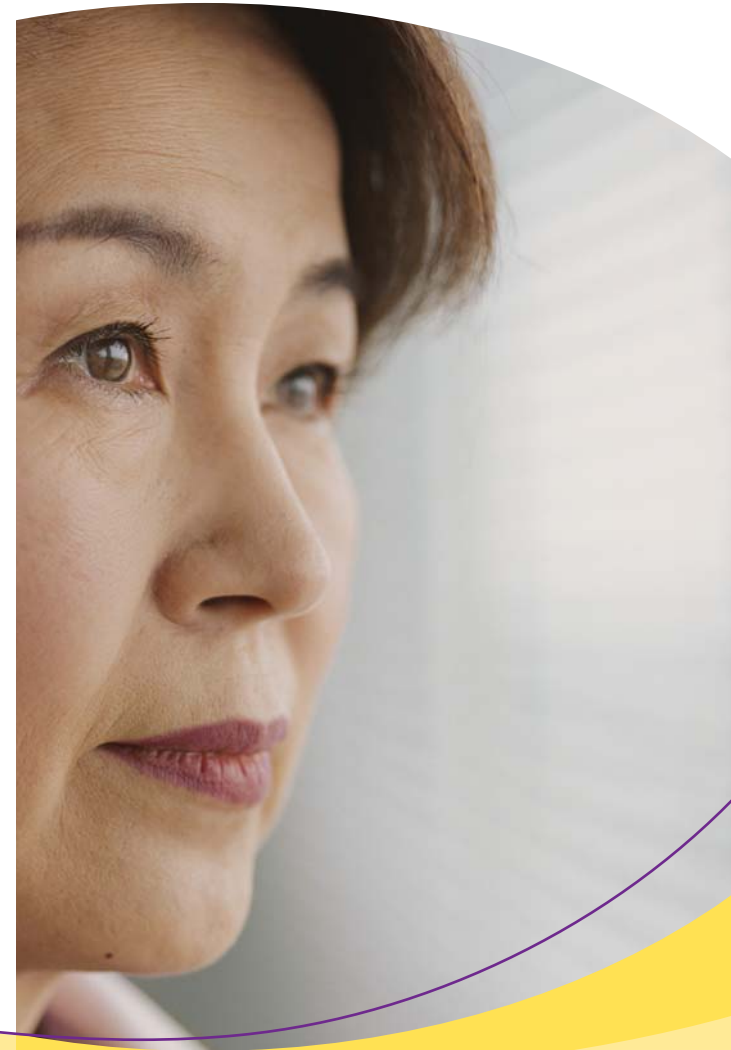
**Metastasis** — Spread of cancer from one part of the body to another.

**Radio-isotope Injection** — A radioactive material injected into the body so that a nuclear scanner can make pictures or a detector can trace it.

**Sentinel Lymph Node** — The first lymph node in the body to come in contact with cancer cells as they leave the primary tumor.

**Seroma** — Clear fluid that is trapped inside a wound.

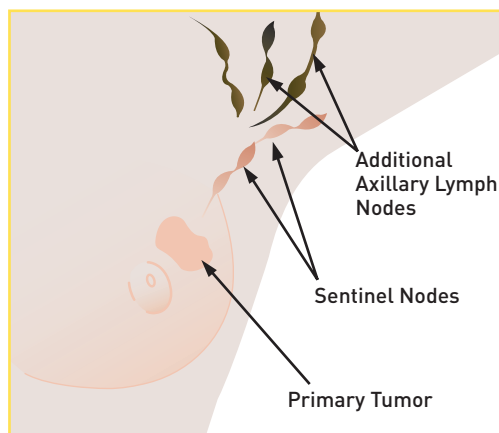
**Stage** — The extent of the cancer. For breast cancer, the stage is determined by the size of the primary tumor, its location and the presence or absence of cancer cells in lymph nodes and other body sites.



## I Need to Understand the Extent of the Cancer

When a woman is diagnosed with breast cancer, one of the first questions she and her doctor want to answer is, "Has the cancer spread?" Advances in procedural techniques have helped to answer this question and improve the physician's ability to develop a more effective treatment plan for breast cancer. One of these techniques, sentinel lymph node biopsy, helps the physician better understand the extent of the cancer, potentially sparing patients from more invasive surgery and/or side effects.

Lymph nodes are small structures located throughout the body that filter out and destroy bacteria and toxic substances. The sentinel lymph node is the first lymph node of the breast. If cancer cells have broken away from the tumor and traveled away from the breast, the sentinel lymph node is more likely than other nodes to contain these cells. By examining the sentinel node, the physician may better determine the status of the entire axilla (underarm area). For example, if the sentinel lymph node is negative for cancer cells, then the remainder of the lymph nodes may also be cancer free.



## Learning About Sentinel Lymph Node Biopsy

### Sentinel Lymph Node Biopsy

Sentinel lymph node biopsy is a minimally invasive technique. For the procedure, the tumor site is injected with a radio-isotope, blue dye, or both. The radio-isotope or blue dye is tracked into the sentinel node. If a radio-isotope is used, a gamma detection device helps the surgeon identify the sentinel node. Once the sentinel node is identified, the surgeon removes the node (or sometimes the first few nodes).

The node(s) are then examined under a microscope. If no cancer is found in the sentinel node, it may not be necessary to remove additional nodes. If cancer is found, more lymph nodes will be removed to check for additional areas of cancer.

Some studies have indicated that sentinel lymph node biopsy may be an accurate way to detect whether or not the cancer cells have spread outside of the breast. These studies have found that sentinel lymph node biopsies have accuracy rates greater than 96% for predicting the presence or absence of cancer cells in the axillary lymph nodes.<sup>1</sup> Nevertheless, long-term outcome results are not yet available. Discuss with your doctor whether or not this procedure is appropriate for you.

Sentinel lymph node biopsy is a minimally invasive technique

### Axillary Lymph Node Dissection

Axillary lymph node dissection is an alternative, as well as a follow-up procedure, to sentinel lymph node biopsy. If the sentinel lymph node biopsy shows that the cancer has spread to the lymph nodes, an axillary lymph node dissection may be performed to determine how many lymph nodes are affected.

Unlike sentinel lymph node biopsy, in this procedure, multiple nodes are removed at once. The procedure removes more tissue and requires more work around the blood vessels and nerve bundles. Although both procedures have the following side effects, more patients reported persistence of these side effects following axillary lymph node dissection than those having only sentinel lymph node removal.<sup>2,3</sup>

- Arm swelling and numbness
- Limitations in range of motion
- Time until return-to-normal activities
- Seroma
- Axillary pain

Your doctor may also recommend axillary lymph node dissection if you have lymph nodes that feel abnormal or are enlarged.

<sup>1</sup>Veronesi, U., et al. "A Randomized Comparison of Sentinel-Node Biopsy with Routine Axillary Dissection in Breast Cancer." *New England Journal of Medicine*. 349. 2003; 546-53.

<sup>2</sup>Swenson, K.K., et al. "Comparison of Side Effects Between Sentinel Lymph Node and Axillary Node Dissection for Breast Cancer." *Annals of Surgical Oncology*. 9(8). 2002; 745-53.

<sup>3</sup>Mansel, R.E. et al. "Fewer Side Effects with Sentinel Lymph Node Removal." *San Antonio Breast Cancer Symposium Dec. 2004*, abstract 15, 18. [http://www.breastcancer.org/research\\_surgery\\_022405a.html](http://www.breastcancer.org/research_surgery_022405a.html). Accessed June 28, 2006.

