

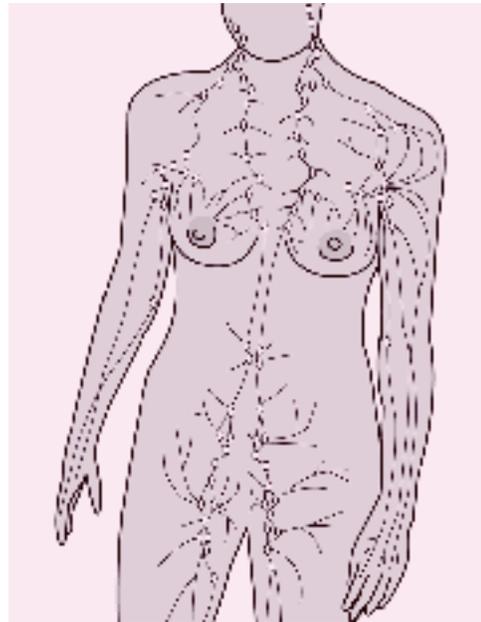
## Lymphatic system and axillary nodes

Lymph vessels, like blood vessels, run all through the body. They carry lymph fluid, cells and other material. Lymph nodes are small clumps of immune cells that act as filters for the lymphatic system. They also store white blood cells that help fight illness. Lymph nodes in the underarm are called the axillary [AK-sil-air-e] nodes. It is important to know if these nodes have cancer. This helps determine breast cancer stage. It also helps to learn if cancer has spread to other parts of the body. During breast surgery, some axillary nodes may be removed to see if cancer cells are present.

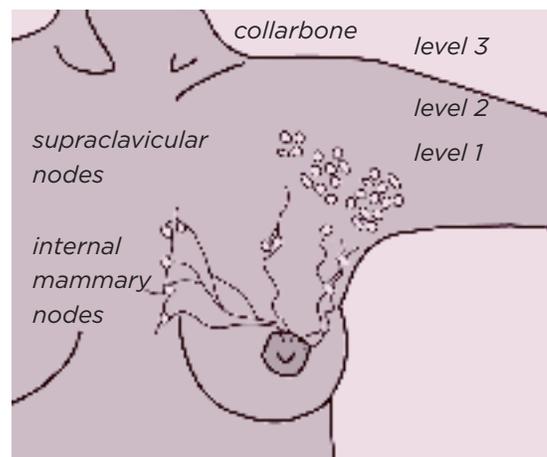
## Axillary nodes and breast cancer

Axillary nodes form a chain from the underarm to the collarbone. Level 1 nodes are located in the underarm. These nodes receive most of the lymph fluid from the breast. Level 2 nodes are higher and receive the fluid from Level 1 and some fluid from the breast and chest wall. Level 3 nodes are below the collarbone and receive fluid from Levels 1 and 2 and from the upper part of the breast and chest wall. When breast cancer spreads, it usually spreads to the Level 1 nodes first.

Axillary nodes are often taken from Levels 1 and 2 during a standard axillary surgery. These nodes are viewed under a microscope to see if cancer cells are present. If so, there is a greater chance the cancer may have spread to other parts of the body. Looking for cancer in the axillary nodes helps determine breast cancer stage and which treatment is needed. Today, it is more common to have a sentinel node biopsy (see below) than a standard axillary surgery.



*The lymphatic system runs throughout the body.*



*Lymph node levels and the internal mammary nodes*

## Axillary lymph node status

Three factors determine the stage of breast cancer:

- 1) Whether the axillary lymph nodes are found to contain cancer.
- 2) Tumor size
- 3) Whether cancer has spread to other areas of the body.

The pathologist most often reports lymph node involvement at the time of surgery using the following five categories:

- pNX: axillary lymph nodes cannot be assessed (for example, they were not removed during surgery)
- pN0: axillary lymph nodes do not have cancer, however, some small groups of cancer cells (called micrometastases) may still be found using other tests
- pN1: micrometastases OR 1-3 axillary lymph nodes have cancer AND/OR internal mammary nodes have tiny cancer cells found on sentinel node biopsy
- pN2: 4-9 axillary lymph nodes have cancer OR internal mammary nodes have cancer that could be felt during a physical exam or could be seen on a mammogram
- pN3: 10 or more axillary lymph nodes have cancer OR infraclavicular (under the clavicle) nodes that have cancer OR internal mammary nodes that have cancer could be felt during a physical exam or could be seen on a mammogram plus 1 or more cancerous axillary nodes OR internal mammary nodes have tiny cancer cells plus 3 or more axillary lymph nodes have cancer OR supraclavicular (above the clavicle) nodes have cancer

## Sentinel node biopsy

*Sentinel* [SEN-tih-nel] *node biopsy* is a procedure used to determine if axillary lymph nodes contain cancer. During surgery, a radioactive substance and/or a blue dye is injected into the cancer site. These substances are not harmful. A tool is used to find the radioactive substance in the first draining lymph node. After locating the sentinel node, it along with several other nodes are removed and checked to see if cancer cells are present. If cancer is present, more lymph nodes may be removed. If cancer is not found in the sentinel node(s), no more lymph nodes are taken. This procedure can reduce the number of lymph nodes that are removed. This helps lower the risk of infection and lymphedema (swelling of the arm).

## Lymphedema

*Lymphedema* [lim-fa-DEE-ma] is a build-up of lymphatic fluid. It causes swelling in the arm or other areas such as the hand, fingers, chest or back. When lymph nodes are removed, some of the lymph vessels can become blocked. This may keep fluid from leaving the arm or hand and cause swelling. Lymphedema can develop weeks, months or years after treatment. It can also vary in its severity. For more information on lymphedema and treatment options, please read the *Lymphedema* fact sheet.

## Resources

American Cancer Society  
1-800-ACS-2345, [www.cancer.org](http://www.cancer.org)

National Cancer Institute  
1-800-4-CANCER, [www.cancer.gov](http://www.cancer.gov)

National Lymphedema Network  
1-800-541-3259, [www.lymphnet.org](http://www.lymphnet.org)

### Related fact sheets in this series:

- Breast Cancer Surgery
- Lymphedema
- Prognostic Factors