

Cancer Staging Fact Sheet

This fact sheet is based on information provided by the National Cancer Institute.

Key Points

- Staging describes the extent or severity of an animal's cancer. Knowing the stage of disease helps the doctor plan treatment and estimate the animal's prognosis.
- Staging systems for cancer have evolved over time and continue to change as scientists learn more about cancer.
- The TNM staging system is based on the extent of the tumor (T), whether cancer cells have spread to nearby (regional) lymph nodes (N), and whether distant (to other parts of the body) metastasis (M) has occurred.
- Most tumors can be described as stage 0, stage I, stage II, stage III, or stage IV.
- Physical exams, imaging procedures, laboratory tests, pathology reports, and surgical reports provide information to determine the stage of the cancer.

1. What is staging?

Staging describes the severity of an animal's cancer based on the extent of the original (primary) tumor and whether or not cancer has spread in the body. Staging is important for several reasons:

- Staging helps the doctor plan the appropriate treatment.
- The stage can be used to estimate the animal's prognosis.
- Knowing the stage is important in identifying clinical trials that may be suitable for a particular patient.
- Staging helps veterinarians and researchers exchange information about patients; it also gives them a common terminology for evaluating the results of clinical trials and comparing the results of different trials.

Staging is based on knowledge of the way cancer progresses. Cancer cells grow and divide without control or order, and they do not die when they should. As a result, they often form a mass of tissue called a tumor. As the tumor grows, it can invade nearby tissues and organs. Cancer cells can also break away from the tumor and enter the bloodstream or the lymphatic

system. By moving through the bloodstream or lymphatic system, cancer cells can spread from the primary site to lymph nodes or to other organs, where they may form new tumors. The spread of cancer is called metastasis.

2. What are the common elements of staging systems?

Staging systems for cancer have evolved over time. They continue to change as scientists learn more about cancer. Some staging systems cover many types of cancer; others focus Page 2 of 3 on a particular type. The common elements considered in most staging systems are as follows:

- Site of the primary tumor.
- Tumor size and number of tumors.
- Lymph node involvement (spread of cancer into lymph nodes).
- Cell type and tumor grade (how closely the cancer cells resemble normal tissue cells).
- The presence or absence of metastasis

3. What is the TNM system?

The TNM system is one of the most widely used staging systems.

The TNM system is based on the extent of the tumor (T), the extent of spread to the lymph nodes (N), and the presence of distant metastasis (M). A number is added to each letter to indicate the size or extent of the primary tumor and the extent of cancer spread.

Primary Tumor (T)

TX	Primary tumor cannot be evaluated
T0	No evidence of primary tumor
Tis	Carcinoma in situ (CIS; abnormal cells are present but have not spread to neighboring tissue; although not cancer, CIS may become cancer and is sometimes called pre-invasive cancer)
T1, T2, T3, T4	Size and/or extent of the primary tumor

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be evaluated
N0	No regional lymph node involvement
N1	Involvement of regional lymph nodes

Distant Metastasis (M)

MX	Distant metastasis cannot be evaluated
M0	No distant metastasis
M1	Distant metastasis is present

4. Are all cancers staged with TNM classifications?

Many types of cancer have TNM designations, but some do not. For example, cancers of the brain and spinal cord are staged according to their cell type and grade. Different staging systems are also used for many cancers of the blood or bone marrow, such as lymphomas. However, other cancers of the blood or bone marrow, including most types of leukemia, do not have a clear-cut staging system.

5. What types of tests are used to determine stage?

The types of tests used for staging depend on the type of cancer. Tests include the following:

- **Physical exams** are used to gather information about the cancer. The doctor examines the body by looking, feeling, and listening for anything unusual. The physical exam may show the location and size of the tumor(s) and the spread of the cancer to the lymph nodes and/or to other organs.
- **Imaging studies** produce pictures of areas inside the body. These studies are important tools in determining stage. Procedures such as x-rays, abdominal ultrasound, computed tomography (CT) scans, magnetic resonance imaging (MRI) scans, and positron emission tomography (PET) scans can show the location of the cancer, the size of the tumor, and whether the cancer has spread.
- **Laboratory tests** are studies of blood, urine, other fluids, and tissues taken from the body. For example, tests for liver function can provide information about the cancer.
- **Pathology reports** may include information about the size of the tumor, the growth of the tumor into other tissues and organs, the type of cancer cells, and the grade of the tumor. Cytology reports also describe findings from the examination of the cells in the fluids or organs.
- **Surgical reports** tell what is found during surgery. These reports describe the size and appearance of the tumor and often include observations about lymph nodes.