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## **Bone Cancer - Stages and Grades [1]**

This section has been reviewed and approved by the [Cancer.Net Editorial Board \[2\]](#), 05/2016

**ON THIS PAGE:** You will learn about how doctors describe a cancer's growth or spread, as well as the way the tumor cells look when viewed under a microscope. This is called the stage and grade. To see other pages, use the menu.

Staging is a way of describing where the cancer is located, if and where it has spread, and whether it is affecting other parts of the body.

Doctors use diagnostic tests to find out the cancer's stage, so staging may not be complete until all of the tests are finished. Knowing the stage helps the doctor to decide what kind of treatment is best and can help predict a patient's prognosis, which is the chance of recovery. There are different stage descriptions for different types of cancer.

### **TNM staging system**

One tool that doctors use to describe the stage is the TNM system. Doctors use the results from diagnostic tests and scans to answer these questions:

- **Tumor (T):** How large is the primary tumor? Where is it located?
- **Node (N):** Has the tumor spread to the lymph nodes? If so, where and how many?
- **Metastasis (M):** Has the cancer metastasized to other parts of the body? If so, where and how much?

The results are combined to determine the stage of cancer for each person. In primary bone cancer, there are 5 stages: stage 0 (zero) and stages I through IV (one through four). The stage provides a common way of describing the cancer, so doctors can work together to plan the best treatments.

Here are more details on each part of the TNM system for bone cancer:

## **Tumor (T)**

Using the TNM system, the “T” plus a letter or number (0 to 4) is used to describe the size and location of the tumor. Some stages are also divided into smaller groups that help describe the tumor in even more detail. Specific tumor stage information for bone cancer is listed below.

**TX:** The primary tumor cannot be evaluated.

**T0:** There is no evidence of a primary tumor.

**T1:** The tumor is 8 centimeters (cm) or smaller.

**T2:** The tumor is larger than 8 cm.

**T3:** There is more than 1 separate tumor in the primary bone site.

## **Node (N)**

The “N” in the TNM staging system stands for lymph nodes. These tiny, bean-shaped organs help fight infection. Lymph nodes near where the cancer started are called regional lymph nodes. Lymph nodes in other parts of the body are called distant lymph nodes.

**NX:** The regional lymph nodes cannot be evaluated.

**N0:** The cancer has not spread to the regional lymph nodes.

**N1:** The cancer has spread to the regional lymph nodes. This is rare for primary bone cancer.

## **Metastasis (M)**

The “M” in the TNM system indicates whether the cancer has spread to other parts of the body, called distant metastasis.

**MX:** Metastasis cannot be evaluated.

**M0:** The cancer has not metastasized.

**M1:** The cancer has metastasized to another part of the body.

**M1a:** The cancer has metastasized to a lung.

**M1b:** The cancer has metastasized to another organ.

## **Grade (G)**

Doctors also describe this type of cancer by its grade (G), which describes how much cancer cells look like healthy cells when viewed under a microscope.

The doctor compares the cancerous tissue with healthy tissue. Healthy tissue usually contains many different types of cells grouped together. If the cancer looks similar to healthy tissue and contains different cell groupings, it is called differentiated or a low-grade tumor. If the cancerous tissue looks very different from healthy tissue, it is called poorly differentiated or a high-grade tumor. The cancer's grade may help the doctor predict how quickly the cancer will spread. In general, the lower the tumor's grade, the better the prognosis.

**GX:** The tumor grade cannot be identified.

**G1:** The cancer cells are well differentiated.

**G2:** The cancer cells are moderately differentiated.

**G3:** The cancer cells are poorly differentiated.

**G4:** The cancer cells are undifferentiated.

## **Cancer stage grouping**

Doctors assign the stage of the cancer by combining the T, N, M, and G classifications.

**Stage IA:** The tumor is low grade (G1 or G2) and 8 cm or smaller (T1). It has not spread to any lymph nodes or to other parts of the body (N0, M0).

**Stage IB:** The tumor is low grade (G1 or G2) and larger than 8 cm (T2). It has not spread to any lymph nodes or to other parts of the body (N0, M0).

**Stage IIA:** The tumor is high grade (G3 or G4) and 8 cm or smaller (T1). It has not spread to any lymph nodes or to other parts of the body (N0, M0).

**Stage IIB:** The tumor is high grade (G3 or G4) and larger than 8 cm (T2). It has not spread to any lymph nodes or to other parts of the body (N0, M0).

**Stage III:** There are multiple high-grade (G3 or G4) tumors in the primary bone site (T3), but they have not spread to any lymph nodes or to other parts of the body (N0, M0).

**Stage IVA:** The tumor is of any size or grade and has spread to the lung(s) (any G, any T, N0,

and M1a).

**Stage IVB:** The tumor is of any size or grade and has spread to the lymph nodes (any G, any T, N1, and any M), or the tumor is of any size or grade and has spread to another organ besides the lung (any G, any T, any N, and M1b).

**Recurrent:** Recurrent cancer is cancer that has come back after treatment. If the cancer does return, there will be another round of tests to learn about the extent of the recurrence. These tests and scans are often similar to those done at the time of the original [diagnosis](#) [3].

In general, patients with the best prognosis have:

- A T1 or T2 tumor
- A lower-grade tumor (G1 or G2)
- A tumor that is easily removed with surgery, such as those located in an arm or leg
- A localized tumor that has not spread
- Certain genetic changes

*Used with permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original source for this material is the AJCC Cancer Staging Manual, Seventh Edition, published by Springer-Verlag New York, [www.cancerstaging.net](http://www.cancerstaging.net) [4].*

*Information about the cancer's stage and grade will help the doctor recommend a specific treatment plan. The [next section in this guide is Treatment Options](#) [5]. Or, use the menu to choose another section to continue reading this guide.*

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## Links

[1] <http://www.cancer.net/cancer-types/bone-cancer/stages-and-grades>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/18539>

[4] <http://www.cancerstaging.net/>

[5] <http://www.cancer.net/node/18541>