Understanding Statistics Used to Guide Prognosis and Evaluate Treatment

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Key Messages

- Survival statistics can help estimate a patient?s prognosis (chance of recovery) and determine the treatment options.
- Survival statistics are different based on the type of cancer, the stage, a patient?s age, and length of time after diagnosis.
- Although statistics can provide an *estimate* of survival, they are based on large groups of patients and cannot tell a person exactly how long he or she will live after a cancer diagnosis.

When people are diagnosed with cancer, one of the first things they may want to know is their chance of survival and recovery. Understanding survival statistics becomes extremely important, yet it can also be confusing. Read below to learn more about how survival statistics can be used to estimate a patient?s prognosis and determine the treatment options.

Estimating how long people live after a cancer diagnosis

Survival statistics, usually given as rates, describe the percentage of people with a certain type of cancer who will be alive a certain time after the cancer is detected. Survival rates can be given for any length of time. Cancer statistics are usually given as a five-year relative survival rate; this describes the percentage of people with cancer who will be alive five years after diagnosis, excluding those who die from other diseases.

Sometimes, survival statistics are calculated to include *all* people with a specific type of cancer, regardless of stage. This is called an *overall* rate:

Example: Overall, the five-year relative survival rate for women with cervical cancer is 68%, which means that about 68 out of every 100 of women with cervical cancer will still be living five years after diagnosis.

Other survival statistics are calculated for specific cancer stages [2] (the stage is an indication of the size of the tumor, and whether and how far the cancer has spread) as survival statistics can vary by stage.

Example: The five-year relative survival rate for early-stage cervical cancer is 91%. This means that 91 out of every 100 women diagnosed with early-stage cervical cancer will be living five years after diagnosis.

Calculating how many people are cancer free or have cancer that is not growing or spreading

Five-year relative survival rates include all people who are alive five years after a cancer diagnosis, including those who are in remission (temporary or permanent absence of disease) or still being treated. Disease-free survival (sometimes abbreviated as DFS) statistics and progression-free survival statistics (sometimes abbreviated as PFS) are more specific survival statistics that are often used when evaluating cancer treatments.

Disease-free survival rates refer only to the percentage of people who experience a complete remission after finishing treatment.

Progression-free survival rates describe the percentage of people who do not experience any *new* tumor growth or cancer spread during or after treatment, including those whose disease has either completely or partially responded to treatment, or those whose disease is stable (the cancer is still present but not growing or spreading).

The concept of ?cure?

In medicine, a disease is considered cured when it?s been successfully treated and does not return. The concept of ?cure? is difficult to apply to cancer because undetected cancer cells can sometimes remain in the body after treatment, causing the cancer to return later (referred to as a recurrence or relapse). Many cancers are considered ?cured? when there is no cancer detected five years after diagnosis. However, recurrence after five years is still possible.

Determining prognosis

Among the first questions often asked when a person is diagnosed with cancer is whether the cancer can be treated successfully. This is called a *prognosis*?the likely course and outcome of the cancer and the chances of recovery. Doctors use survival statistics to make predictions about prognosis.

Example: A man diagnosed with testicular cancer may be said to have a *favorable prognosis*, as the overall five-year relative survival rate for testicular cancer is 95%.

Similar to survival statistics, prognosis also depends on the stage of the cancer at diagnosis?how early the cancer is detected and if or how far it has spread.

Example: If detected early, the five-year relative survival rate for colorectal cancer is 90%. For advanced stage colorectal cancer that has spread to distant parts of the body, the five-year relative survival rate is about 12%.

Points to remember

- Statistics are estimates that describe trends in large numbers of people. Statistics *cannot* be used to predict what will actually happen to an individual.
- Survival statistics for different cancer types, stages of cancer, age groups, or time periods can vary dramatically. People are encouraged to ask their doctor for the most appropriate statistics based on their individual medical condition.
- As with any medical information, ask your doctor for clarification if cancer-related statistics seem unclear.

Evaluating treatment options

Five-year relative survival rates are commonly used as a way to evaluate and compare different treatment options. Although someone who has survived five years after a cancer diagnosis is not necessarily ?cured,? the five-year relative survival statistic is considered a good indication that the cancer is responding to treatment and that the treatment is successfully extending the life of the individual with cancer. Survival statistics help doctors determine which treatments provide the most benefit to people with cancer, and whether the benefits outweigh any risks (such as unpleasant side effects) associated with the treatment. Learn about making decisions about cancer treatment [3].

Points to remember

- Because five-year survival statistics are based on patients who were treated at least five years ago, they may not reflect the most recent advances in treatment.
- Although survival statistics provide useful information when deciding among treatment options, they should be used as only one factor in a comprehensive treatment plan designed by a doctor who is familiar with a person?s individual situation.

More Information

Understanding Statistics on Incidence, Prevalence, and Mortality [4]

Risk Factors [5]

Survivorship [6]

Links:
[1] http://www.cancer.net/about-us
[2] http://www.cancer.net/node/25070
[3] http://www.cancer.net/node/24582
[4] http://www.cancer.net/node/24960
[5] http://www.cancer.net/node/24868
[6] http://www.cancer.net/node/22