



CANCERcare®  
**Connect™**

# Living with Prostate Cancer

## Is Radiation Treatment Right for You?

Presented by

**Adam P. Dicker, MD**

Associate Professor of Radiation Oncology

Bodine Center for Cancer Treatment

Kimmel Cancer Center

Thomas Jefferson University Medical College

Philadelphia, Pennsylvania

*Find out about:*

- Pros & cons of radiation treatment
- Other treatment options for prostate cancer
- Different types of radiation treatment
- What to expect



CANCERcare®

Reaching Out With Help & Hope

This booklet is based on information presented in a March 2004 **CANCERcare**<sup>®</sup> Telephone Education Workshop by Adam P. Dicker, MD, Director of Clinical Research, Co-Director of Preclinical Therapeutics, and Director of Experimental Radiation Oncology at the Bodine Center for Cancer Treatment and Kimmel Cancer Center, and Associate Professor of Radiation Oncology at Thomas Jefferson Medical College in Philadelphia, Pennsylvania. The workshop was a collaboration of **CANCERcare**, The Prostate Net, and the Us TOO International Prostate Cancer Education and Support Network.

On page 9 you will find answers to many Frequently Asked Questions. Definitions of **boldfaced** words in the text may be found in the Glossary on page 14. A list of additional resources of information on the treatment of prostate cancer is provided on page 16 of this booklet.

## About **CANCERcare**

**CANCERcare** is dedicated to helping people face the many challenges of a cancer diagnosis. As the largest national nonprofit organization of its kind, **CANCERcare** provides free professional support services to more than 80,000 people annually across the country. Each year, **CANCERcare** conducts 70 Telephone Education Workshops as part of its **CANCERcare Connect**<sup>™</sup> program. The workshops are a way for people across the country to learn about cancer-related issues from leading oncology experts. In addition to these workshops, **CANCERcare** employs more than 40 professional oncology social workers who provide free counseling services.

## The **CANCERcare** Constellation of Services

- **CANCERcare Support**<sup>™</sup> Free counseling for individuals and groups in three different ways: face to face, on the telephone, and online. All support services are facilitated by professional oncology social workers.
- **CANCERcare Connect**<sup>™</sup> Telephone Education Workshops provide cancer patients and health care professionals with the opportunity to listen to and ask questions of top cancer experts from around the country.
- **CANCERcare Online**<sup>™</sup> **CANCERcare's** website, [www.cancercaresupport.org](http://www.cancercaresupport.org), is more than just an informational resource. Visitors can communicate with a social worker, join a support group, listen to an archived Telephone Education Workshop, and learn about topics ranging from managing careers to talking to their families during a time of crisis.
- **CANCERcare Inform**<sup>™</sup> Educational workshops and fact sheets to help people with cancer and their loved ones cope with the day-to-day problems associated with the disease.
- **CANCERcare Assist**<sup>™</sup> Help with obtaining funds for disease-related costs, such as pain medication, transportation, home care, and child care.

# With advances in radiation treatment, prostate cancer patients with early-stage disease now have more choices than ever.

**T**oday, there are many treatment options for prostate cancer patients. But sometimes having more choices can be confusing. This booklet explains the different types of radiation treatments available for patients most likely to benefit from this form of treatment: those with **localized disease**—that is, any of the first three stages of prostate cancer (see box on page 2). In localized disease, the cancer is either confined to the prostate or has spread only to nearby organs or **lymph nodes**.

For patients whose prostate cancer has spread to other, more distant parts of the body, radiation can effectively ease their pain. Sometimes it can even slow the progress of the disease. But once the tumor has spread far beyond the prostate, radiation treatments alone cannot cure prostate cancer.

Like surgery, radiation is a local treatment. Its cure rate can be as good as that of surgery. Many patients, for whom radiation is an option, choose it because they want to avoid surgery, the long recovery time, and the side effects of surgery, such as loss of bladder control or sexual function. But there are side effects from radiation, too (see page 7). Generally, however, radiation causes fewer long-term side effects than does surgery.

Effective radiation treatment of prostate cancer means adding other treatments as well. One of the most important advances in this area is treatment with hormones, also known as **androgen suppression therapy**.

## Stages of Prostate Cancer

### Stage T1, Early Disease, Low Risk

Microscopic tumor detectable only with a biopsy. Tumor has not spread beyond the prostate gland.

**Common treatments:** Watchful waiting, surgery (removal of the prostate, known as **prostatectomy**), external or internal radiation.



### Stage T2, Intermediate Disease, Intermediate Risk

Tumor can be felt during a rectal exam, but it has not spread beyond the prostate.

**Common treatments:** Surgery, external or internal radiation, possibly combined with hormonal therapy.



### Stage T3, Locally Advanced Disease, Higher Risk

Tumor has spread to nearby tissues and/or **lymph nodes** or has invaded the **seminal vesicles**. No spread of the cancer to other organs.

**Common treatments:** Radiation, often combined with hormonal therapy. Surgery is an option for some patients.



### Stage T4, Advanced Disease, Highest Risk

Tumor has spread beyond the prostate to other parts of the body.

**Common treatments:** Hormonal therapy, possibly combined with radiation, and promising new chemotherapies. Treatment is geared toward easing symptoms and slowing the disease.



Androgens—the male sex hormones, including testosterone—fuel prostate tumors. Hormone treatment slows a tumor’s growth because testosterone is either eliminated or blocked from entering prostate cancer cells. Carefully designed clinical trials proved that adding hormone treatments to radiation therapy can improve survival rates in prostate cancer patients.

Hormone treatments can last two to three years. Depending on the type of hormones used, side effects can range from hot flashes to a loss of sex drive and impotence—the inability to get or sustain an erection. But the side effects are temporary; usually they occur during treatment and for a short time afterward. In general, for every month of hormone treatment, the side effects last for another month or two. Normal testosterone levels do return, and many of these side effects eventually go away, even in men who need hormone treatments for a year or two.



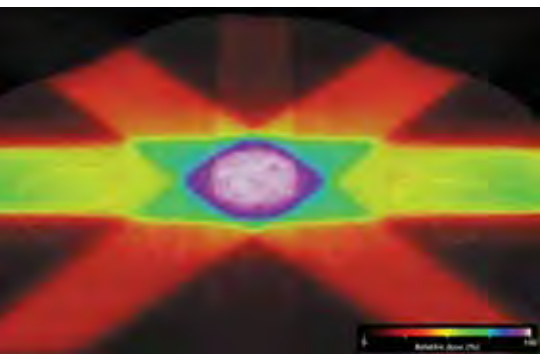
Simply doing nothing is also a treatment option. Called “watchful waiting,” this treatment approach is often recommended for men 60 to 90 years old whose tumors are slow growing and not life threatening.

If you are trying to decide between surgery and radiation, your doctor can guide you. When weighing the choice between surgery and radiation, you may want to talk to more than one physician, since some lean toward the treatment they offer. Not surprisingly, surgeons generally favor surgery, and radiation oncologists generally recommend radiation. See the box, “Treatment Checklist,” on page 5 for some of the issues to consider.

# Types of Radiation

## EXTERNAL BEAM RADIATION THERAPY

This treatment usually takes place once a day, five days a week, for six to eight weeks. As the name suggests, x-rays are aimed from outside the body directly at the prostate tumor. In the past few decades scientists have made important advances in



*Three-dimensional conformal radiation therapy. The highest dose of radiation is delivered where the beams cross, at the prostate tumor in the center (white), while surrounding organs and tissues receive much lower doses (red and yellow) of radiation.*

this treatment. One such advance is called **three-dimensional conformal radiation therapy**, or **3D-CRT**. With this technique, computers use 3D images to map the precise location of tumors. Doctors can then aim radiation beams at the prostate from different directions. The beams are “shaped” or conformed to the dimensions of the tumor.

In this way, the tumor receives the maximum dose of radiation, while nearby organs, such as the bladder and rectum, are spared.

Scientists further developed 3D-CRT with another advance known as **IMRT—intensity modulated radiation therapy**. As its name implies, the intensity of each radiation beam is modified. This allows for an even more precise adjustment of the radiation dose to the prostate tumor. IMRT allows doctors to increase the amount of tumor-killing x-rays, while protecting nearby normal tissue. In general, giving higher doses of radiation translates into a greater chance for a cure.

Doctors consider both 3D-CRT and IMRT to be state-of-the-art techniques. Each treatment is given daily, usually for less than half an hour each for five days a week over a period of six to

## Treatment Checklist

**W**hen deciding between surgery and radiation, here are some of the issues to consider and discuss with your doctor:

### Stage of Cancer

Patients with early-stage tumors are candidates for radiation, especially those with smaller, slow-growing cancers.

### Side Effects

In general, surgery poses a higher risk of long-term side effects, such as incontinence or impotence, as well as a longer recovery time.

### Prostate Size, Prior Surgery

A man with an enlarged prostate may not be a good candidate for radiation, since the larger gland would require a much larger x-ray dose. Hormones given to shrink the gland may raise the chance that cancer cells lingering around the outside edge of the prostate could be missed by radiation. Any prior surgery on the prostate may have left scar tissue. This tissue could pose urinary problems that might be worsened by radiation treatment.

### Age

Some experts believe that men in their 40s, 50s, and 60s should choose surgery. Surgery can offer them a long-term cure. Radiation in younger men could pose a higher risk of bladder or rectal cancer decades down the line. But more precise methods of radiation, including brachytherapy, could greatly reduce this risk.

eight weeks, and sometimes longer. IMRT may offer advantages for some patients. Talk with your radiation oncologist about the best method for you.

## BRACHYTHERAPY

This form of radiation therapy is becoming more popular, both in the United States and elsewhere in the world. Its name derives from the Greek word for “close up.” In **brachytherapy**

(pronounced “break-ee”-therapy), radiation is delivered internally through tiny seeds implanted in the prostate. Each titanium seed contains a tiny amount of a radioactive substance that emits radiation safely within an inch (roughly two centimeters) of its surroundings.

During the procedure, a doctor inserts anywhere from one to two dozen seeds directly into the prostate gland, guided by ultrasound and a CAT scan.



*Brachytherapy. X-ray of pelvic area showing implanted radioactive seeds.*

The patient is under anesthesia throughout the procedure; he usually can go home on the same day. The seeds emit radiation for three to six months. (Sometimes doctors combine the seed implants with external beam radiation therapy.)

Sometimes permanently implanted seeds can migrate away from the prostate. They may move to the bladder or rectum, unintentionally harming healthy tissues, or wind up in the urine. The seeds can also get into a man’s semen when he ejaculates during orgasm. To protect his partner, a sexually active patient should use condoms during intercourse for the first eight weeks after the procedure. After that, the radiation in the seeds weakens so that it’s harmless.

When seeds are left in the body permanently, they are the low-dose variety. A second type of brachytherapy is called **HDR**, or **high-dose rate** brachytherapy. These seeds are placed in the body only for a short time before being removed. The concept is the same: the seeds emit radiation at close range to kill tumor cells. HDR generally requires a 24-hour hospital stay. It is usually combined with some form of external beam radiation therapy.

During radiation treatments, patients meet weekly with their doctor. Take this time to talk about any side effects you may be

## Keeping Score

Your doctor may discuss “Gleason score” and “PSA level” with you. What do they mean? The **Gleason score** is determined by a pathologist, a doctor who first establishes that it is indeed prostate cancer and evaluates the cancer to determine its aggressiveness. **PSA** refers to “prostate-specific antigen”—a protein produced by the prostate. High levels of PSA in the blood may mark the presence of prostate cancer, but they also can indicate a benign enlargement of the prostate gland. PSA is measured in nanograms per milliliter (ng/mL) of blood. The Gleason score, coupled with the PSA level and physical exam, are used by your physician to determine the most appropriate therapy.

experiencing. Many of these side effects can be managed with simple measures.

## Radiation Side Effects

### EXTERNAL BEAM RADIATION THERAPY

It can take a number of weeks for side effects to appear. Usually, these will ease or disappear after you complete your treatment. Talk with your urologist if any of these symptoms linger for more than six months after treatment:

- Fatigue
- Increased urination (does not affect most patients)
- Discomfort when urinating (does not affect most patients)
- More frequent bowel movements
- Minor rectal bleeding and irritation
- Impotence

Within five years of having external beam radiation, a number of patients can also lose sexual function. Half of those who

were able to achieve erection before treatment will become impotent. Drugs can address this problem, something you should discuss with your doctor.

### **INTERNAL RADIATION (BRACHYTHERAPY) (SEED IMPLANTS)**

The side effects from implanted radioactive seeds are somewhat different from those of external beam treatments. These side effects usually start out within one to three weeks and last from three to six months:

- More frequent urination
- More discomfort during urination
- Waking in the middle of the night to urinate
- Impotence in 30 percent to 40 percent of men

Talk to your doctor about the drugs available to reduce the severity of these symptoms.

# Frequently Asked Questions

**Q Is it best to have external beam radiation first and then have seeds implanted? Or is it better to have the seeds placed in first?**

**A** There are equally strong data for both approaches. The most important thing is to discuss your individual situation with a doctor who knows what he or she is doing, someone you trust.

**Q After seed therapy, what is the cure rate for people who fall into the favorable risk group?**

**A** No matter what kind of treatment you receive, the biology of your particular cancer will determine long-term results. But generally speaking, men with early-stage prostate cancer can expect a cure rate somewhere between 85 percent and 90 percent.

**Q I've had radiation treatment for prostate cancer in the past, but the cancer has come back. Can I have radiation again?**

**A** If a recurring cancer spreads beyond the prostate, it's likely your doctor will use hormones to slow the disease. If the new tumor is confined just to the prostate, most doctors do not repeat radiation treatment. Some doctors do implant seeds in patients who have not already been treated with seeds but have had external beam radiation treatment. Because prior radiation can cause scar tissue, surgery is usually not performed on the prostate when cancer cells return. Some doctors do use a technique called **cryotherapy**—freezing the prostate to kill cancer cells found in the gland. Although this technique has been approved by the US Food and Drug Administration, more research is needed to establish its effectiveness.

### **Q What about local heat treatments?**

**A** Heat can kill cancer cells too. The heat is usually delivered by microwaves or ultrasound through a tiny probe inserted into the prostate gland. Cancer cells are most sensitive to radiation or heat during specific times in the cell cycle—when they are actively growing and multiplying. If we can hit tumor cells at the right time, we may destroy more of them. However, very few doctors use heat treatments because the machines and expertise are not widely available. We don't have a lot of data on how well heat treatments work, but it certainly bears studying.

### **Q Why does radiation sometimes cause erectile dysfunction and what can be done about it?**

**A** We don't really know why radiation can affect a man's ability to get and sustain an erection. There are bundles of nerves and blood vessels that control this function, and they can be damaged by surgery or radiation treatments. Within five years of having external radiation, a number of patients can lose sexual function. Half of those who were able to achieve an erection before treatment will become impotent. Among men who have seeds implanted, 30 percent to 40 percent will experience loss of erections. About two thirds of these men will respond to medications for erectile dysfunction. Medication is helpful for men who receive either internal or external radiation. Talk with your doctor about using such drugs as sildenafil (Viagra), tadalafil (Cialis), or vardenafil (Levitra), which are intended mainly to deal with other causes of impotence due to age, but they are not indicated for everyone.

### **Q Other than drugs, what techniques can restore the ability to have an erection?**

**A** Short-acting drugs can be injected directly into the penis to induce an erection. A vacuum pump is also available that can swell the penis with blood; the man then uses an elastic

ring at the base of the penis to keep the blood there and maintain the erection. Many men with impotence are satisfied with penile implants, which are placed surgically in the body. It's best to talk to a urologist who specializes in erectile dysfunction about such implants.

**Q Can prostate cancer treatments lead to low white blood cell counts or brittle bones?**

**A** Radiation therapy should not cause any change in blood counts over a six- to eight-week course of treatment. Men on hormone treatments for long periods can experience some loss of bone density—a condition identical to the effects of osteoporosis. Some doctors recommend that these men take medications specifically designed to help strengthen their bones. Calcium supplements and herbal remedies are not sufficient to replace this type of bone loss.



**Q What treatment can correct radiation damage to the bladder and the formation of blood clots?**

**A** Anticoagulant drugs can help. Another solution is the use of a hyperbaric oxygen chamber, much like the treatment used for scuba divers with the bends. While in the chamber, patients breathe 100 percent oxygen at higher-than-normal pressure. This pumps more oxygen into the blood. With more oxygen being carried in the blood, damaged tissues in the body can heal more quickly. Hyperbaric treatment has proved very effective in patients with all types of radiation injuries.

**Q After receiving radiation treatments years ago, I still have bleeding from the rectum and frequent, urgent bowel movements. Can this ever be corrected?**

**A** This syndrome, which doctors refer to as **radiation proctitis**, can occur in up to 35 percent of patients. It is caused by damage from radiation to the lining of the rectum. But as radiation treatments improve, the incidence of proctitis is dropping.

For patients who are affected, there are a number of options to treat damaged areas in the rectum, including cortisone enemas, use of a chemical called formalin, and laser treatments. The aim is to heal and seal injured blood vessels. If you are suffering from radiation proctitis, seek out a gastroenterologist or a colorectal surgeon who has treated a large number of such cases. This condition can significantly affect quality of life.

**Q I'm being treated with brachytherapy. Why do I feel a burning sensation when I urinate? Will that feeling ever stop?**

**A** Some patients do experience nerve inflammation from radiation treatments. That is probably what produces the feeling of burning. Some physicians use non-steroidal anti-inflammatory drugs to counteract this. Celecoxib (Celebrex) or rofecoxib (Vioxx) are two examples of drugs that offer relief in many patients. Generally the burning sensation does stop after a while, although 5 to 10 percent of patients can still experience this discomfort even a year after treatment.

Drugs used to treat urinary symptoms such as urgency, a weak or halting stream, or an inability to empty the bladder that can result from an enlarged prostate, may also help. These drugs include tamsulosin (Flomax), doxazosin (Cardura), and terazosin (Hytrin). All of these drugs require a prescription.

**Q What are the long-term effects of radiation on the immune system?**

**A** In general there probably is some effect on the immune system, although we're not sure exactly what that is. Many factors can affect the immune system. The stress of a cancer diagnosis is just one. Scientists do need to study this more. But in the meantime, patients can use a number of different techniques to help ease stress—meditation, hypnosis, biofeedback, relaxation techniques, support groups, and music therapy, to name just a few.

# Glossary

**androgen suppression therapy** Inhibition of male sex hormones, testosterone in particular, which fuel prostate tumors. Also known as hormone therapy. With hormone treatments, testosterone is either eliminated or blocked from entering prostate cancer cells. Often combined with radiation treatment.

**brachytherapy** Radiation treatment in which radioactive pellets or “seeds” are placed in the prostate gland to kill cancer cells. There are two types of brachytherapy: low-dose pellets placed in the prostate permanently, and high-dose rate (HDR) seeds placed temporarily.

**cryotherapy** Freezing parts of the prostate to kill cancer cells found in the gland.

**external beam radiation therapy** As its name suggests, x-rays are aimed from outside the body directly at the prostate tumor. This treatment usually takes place once a day, five days a week for six to eight weeks. (See three-dimensional conformal radiation and IMRT, below.)

**Gleason score** A measure of a tumor’s malignancy, on a scale of 1 to 10. A low-risk score would be 6 or less.

**HDR (high-dose rate) brachytherapy** Highly radioactive seeds placed into the prostate temporarily.

**IMRT—intensity modulated radiation therapy** The intensity of each radiation beam is modified, allowing for precise adjustment of the radiation dose to the prostate tumor. Along with 3D-CRT, IMRT is an advance in external radiation treatment.

**localized disease** Cancer that is confined to the prostate (in this case) or has only spread to nearby organs or lymph nodes.

**lymph nodes** Small “filtering stations” that remove waste and fluids and help fight infection. When invaded by cancer cells, lymph nodes are a point from which tumors can spread throughout the body.

**PSA** Refers to “prostate-specific antigen,” a protein produced by the prostate gland. High blood levels of PSA may flag the presence of prostate cancer. Generally, levels under 4 nanograms per milliliter of blood (a very tiny amount) are considered normal, although new studies have called this into question.

**prostatectomy** Surgical removal of the prostate gland. An option chosen by many patients with early-stage disease.

**radiation proctitis** Radiation damage to the lining of the rectum, which can lead to irritation, bleeding, and diarrhea or frequent, urgent bowel movements. May affect up to 35 percent of patients receiving radiation treatments.

**seminal vesicles** Small sacs near the prostate gland that store semen.

**three-dimensional conformal radiation therapy** or **3D-CRT** An improvement on external beam radiation. In 3D-CRT, computers map the precise location of tumors. Radiation beams are “shaped” or conformed to the dimensions of the tumor. In this way, the tumor receives the maximum dose of radiation, while nearby organs, such as the bladder and rectum, are spared.

# Resources

## **CANCERCARE**

1.800.813.HOPE (4673)  
E-mail: [teled@cancercare.org](mailto:teled@cancercare.org)  
Website: [www.cancercare.org](http://www.cancercare.org)

## **Us TOO Prostate Cancer Education and Support**

1.800.808.7866  
E-mail: [ustoo@ustoo.org](mailto:ustoo@ustoo.org)  
Website: [www.ustoo.com](http://www.ustoo.com)

## **Prostate Cancer Foundation**

1.800.757.CURE  
E-mail: [info@prostatecancerfoundation.org](mailto:info@prostatecancerfoundation.org)  
Website: [www.prostatecancerfoundation.org](http://www.prostatecancerfoundation.org)

## **The Prostate Net**

1.888.4PROSNET (477.6763)  
Website: [www.prostate-online.org](http://www.prostate-online.org)

## **Erectile Dysfunction Institute**

952.852.5560  
Website: [www.erectile-dysfunction-impotence.org](http://www.erectile-dysfunction-impotence.org)

## **American Cancer Society**

1.800.ACS.2345  
Website: [www.cancer.org](http://www.cancer.org)

## **National Cancer Institute**

Cancer Information Service  
1.800.4.CANCER (422-6237)  
Website: [www.cancer.gov](http://www.cancer.gov)

## **American Society of Clinical Oncology**

People Living With Cancer  
Website: [www.peoplelivingwithcancer.org](http://www.peoplelivingwithcancer.org)

## **The American Society for Therapeutic Radiology and Oncology**

1.800.962.7876  
Website: [www.astro.org](http://www.astro.org)

## **MedlinePlus (National Library of Medicine)**

Website: [www.nlm.nih.gov/medlineplus/prostatecancer.html](http://www.nlm.nih.gov/medlineplus/prostatecancer.html)

The information presented in this patient booklet is provided for your general information only. It is not intended as medical advice and should not be relied upon as a substitute for consultations with qualified health professionals who are aware of your specific situation. We encourage you to take information and questions back to your individual health care provider as a way of creating a dialogue and partnership about your cancer and your treatment.

### **Contacting *CANCERcare***

#### **National Office**

*CANCERcare*

275 Seventh Avenue

New York, NY 10001

E-mail: [teled@cancercare.org](mailto:teled@cancercare.org)

#### **Administration**

Tel: 212.712.8400

Fax: 212.712.8495

E-mail: [info@cancercare.org](mailto:info@cancercare.org)

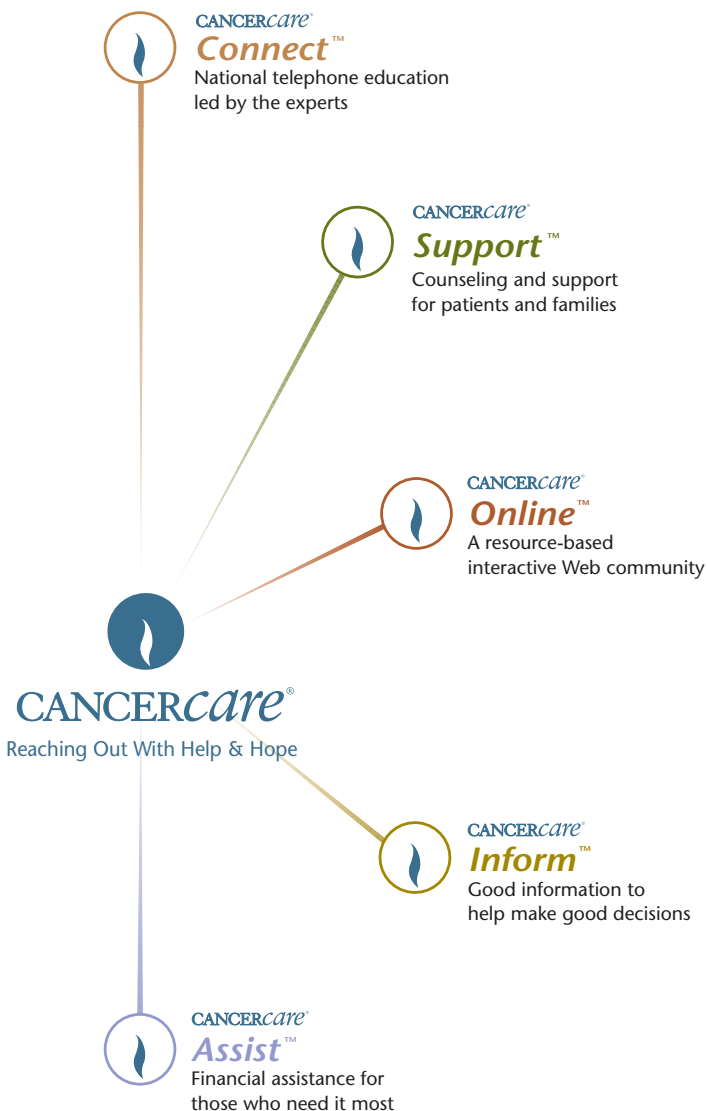
Website: [www.cancercare.org](http://www.cancercare.org)

#### **Services**

Tel: 212.712.8080

1.800.813.HOPE (4673)

## The *CANCERcare*<sup>®</sup> Constellation of Services



**National Office**  
CANCERCARE  
275 Seventh Avenue  
New York, NY 10001

**Services**  
212.712.8080  
1.800.813.HOPE (4673)  
Fax: 212.712.8495