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Angiogenesis and Angiogenesis Inhibitors to Treat Cancer

Approved by the [Cancer.Net Editorial Board](#), 03/2016

Angiogenesis is the formation of new blood vessels. This process is a normal part of growth and healing. It also plays a role in several diseases, including cancer.

Once a tumor grows to a certain size, it needs nutrients and oxygen from the blood to grow and spread. The tumor sends chemical signals that stimulate the growth of new blood vessels that carry the blood to it.

The angiogenesis process is a collection of many steps. This means that each step in this process is a potential target for new cancer treatments. The hope is that the tumor will “starve” and die if it cannot get enough nutrients and oxygen.

Angiogenesis inhibitors or anti-angiogenics are drugs that block angiogenesis. They are an important part of treatment for some types of cancer.

Cancer treatments that block angiogenesis

The following drugs affect angiogenesis in one or more ways. Many also affect other ways that tumors grow. They are all approved by U.S. Food and Drug Administration for specific types of cancer. These drugs are often given with other types of treatment. Talk with your doctor to get more information about these and other angiogenesis inhibitors.

- **Axitinib (Inlyta)** is an option to treat kidney cancer.
- **Bevacizumab (Avastin)** is used for colorectal cancer, kidney cancer, and lung cancer.
- **Cabozantinib (Cometriq)** is used for a type of thyroid cancer called medullary thyroid cancer.
- **Everolimus (Afinitor, Zortress)** is used to treat kidney cancer, advanced breast cancer, and pancreatic neuroendocrine tumors (PNETs). It is also an option for a rare type of noncancerous brain tumor called subependymal giant cell astrocytoma.
- **Lenalidomide (Revlimid)** is a treatment for multiple myeloma and tumors involving

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lymphoma,

and sarcoma.

- **Ramucirumab (Cyramza)** is used to treat advanced stomach cancer and gastroesophageal junction adenocarcinoma. This is a form of cancer located where the stomach joins to the esophagus. This drug is also used for colorectal cancer and non-small cell lung cancer.
- **Regorafenib (Stivarga)** is used for colorectal cancer and gastrointestinal stromal tumor.
- **Sorafenib (Nexavar)** is an option for kidney cancer, liver cancer, and thyroid cancer.
- **Sunitinib (Sutent)** is used to treat kidney cancer, PNET, and gastrointestinal stromal tumor.
- **Thalidomide (Synovir, Thalomid)** is a treatment for multiple myeloma. Women who are pregnant or plan to become pregnant should not take this drug because it is harmful to fetuses.
- **Vandetanib (Caprelsa)** is another option for medullary thyroid cancer.
- **Ziv-aflibercept (Zaltrap)** is an option for colorectal cancer.

Researchers are also studying many of these drugs for other types of cancer that may not be listed here. Talk with your doctor for more information about anti-angiogenic **clinical trials**.

Side effects of angiogenesis inhibitors

Angiogenesis is important to many of the body's normal processes. Therefore, these drugs can cause a wide range of side effects, including:

- High blood pressure
- A rash and/or dry, itchy skin
- Hand-foot syndrome, which causes tender, thickened areas on the skin, sometimes with blisters, on palms and soles
- Diarrhea
- Fatigue
- Low blood counts
- Problems with wound healing or cuts re-opening

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benefits of these

For example, patients who receive some treatments have a higher risk of heart failure with bevacizumab. These treatments include chemotherapy drugs called anthracyclines and radiation therapy to the chest. Another rare side effect is bowel perforations, or holes in the intestines. These often require surgery to correct.

Questions to ask your health care team

Consider asking your doctor the following questions about angiogenesis inhibitors:

- Do you recommend that an angiogenesis inhibitor be a part of my treatment plan? Which one? Why?
- What are the risks and benefits of the drug?
- What are the potential short-term and long-term side effects of the drug?
- How long will I need to take the drug?
- How is this drug different from chemotherapy or other treatments?
- Will this drug be used in addition to other treatments?
- What clinical trials are open to me?
- If I'm worried about managing the costs of cancer care, who can help me?
- Is there anything else I should be asking?

More Information

[Types of Cancer](#)

[Understanding Targeted Therapy](#)

[Skin Reactions to Targeted Therapies](#)

[Side Effects](#)

Additional Resources

The Angiogenesis Foundation: [Treatments](#)

National Cancer Institute: [Angiogenesis Inhibitors](#)

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