MAYO CLINIC
Cancer Center

together

Fall 2008: Volume 8 Number 3

IN THIS ISSUE

Learning About Lymphoma

Lymphoma is cancer of the *lymphatic system*. The lymphatic system includes the lymph nodes (lymph glands), spleen, thymus gland, and bone marrow. Lymph nodes are small, bean-shaped structures, with 300 to 500 found throughout the body. They produce and store white blood cells, called lymphocytes, which are involved in fighting infection and inflammation.

When lymphocytes grow abnormally and become cancer cells, they accumulate in lymph nodes and almost any other organs. Lymphomas are categorized as either non-Hodgkin lymphoma (NHL) or Hodgkin lymphoma.

Non-Hodgkin Lymphoma (NHL)

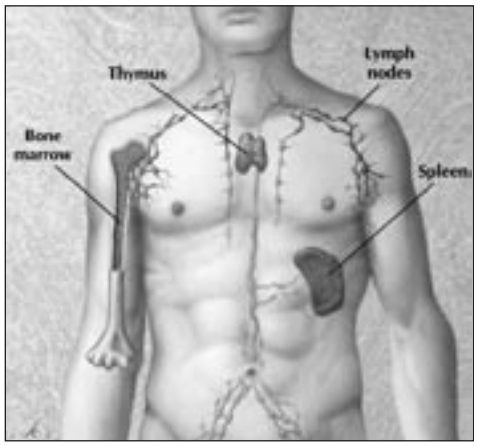
Non-Hodgkin lymphoma is the most common of the lymphomas and begins in either B cells or T cells. At least 30 different forms of non-Hodgkin lymphoma have been identified. About 95 percent of non-Hodgkin lymphomas are diagnosed in adults and about 5 percent in children.

There are many forms of non-Hodgkin lymphoma, but the most common type is diffuse large B-cell lymphoma. Other forms may include:

- Chronic lymphocytic leukemia (CLL)/Small lymphocytic lymphoma (SLL)
- Follicular lymphoma
- Marginal zone lymphoma
- Peripheral T-cell lymphomas

Less common types of NHL include:

- Mantle-cell lymphoma
- Primary mediastinal B-cell lymphoma
- Burkitt lymphoma
- Lymphoplasmocytic lymphoma



The lymphatic system

Hodgkin Lymphoma

Hodgkin lymphoma is an uncommon cancer of the lymphatic system that most often affects people between the ages of 15 and 34 and those older than 55.

In individuals with this cancer, cells in the lymphatic system also grow abnormally and may accumulate in the lymphatic system and in other organs. Many initial symptoms (fever, fatigue, night sweats, and weight loss) are similar to influenza symptoms. As the disease progresses, it reduces the body's ability to fight infection and tumors develop.

Signs, Symptoms and Diagnosis of Lymphomas

Many of the first lymphoma symptoms can also be symptoms of other diseases. Often individuals may think they have a cold that won't go away. Symptoms may include:

NHL	Hodgkin lymphoma
• Painless swelling of lymph nodes, especially in the neck or under the arms • Fever • Night sweats • Unexplained weight loss • Unexplained tiredness and lack of energy	• Painless swelling of lymph nodes, especially in the neck, under the arms or groin • Fever • Night sweats • Unexplained weight loss • Itching • Unexplained fatigue • Cough • Abnormal blood counts • Reed-Sternberg cells in lymph node biopsy

If lymphoma is suspected, a physician will conduct a complete physical examination, paying special attention to the lymph nodes. Many other tests may be needed to confirm a diagnosis, including:

- **Blood tests** for different blood cells
- **Bone marrow examination** of tissue inside the bones
- **Biopsy** of lymph node or other organs
- **Chest X-ray**
- **CT (computerized tomography) scan** of internal organs
- **MRI (magnetic resonance imaging)** of the brain and spinal cord
- **PET (positron emission tomography) scan** of areas affected and for response to treatment

Staging and Treatment of Lymphomas

Treatment depends on the specific kind of lymphoma, the stage of the disease, the symptoms and the individual's overall health. Four stages are used to describe all lymphomas:

Stage 1: when lymphoma is found in only one lymph node or one organ; early disease
Stage 2: disease that is confined to two or more lymph nodes on one side of the *diaphragm*
Stage 3: advanced disease with involvement of lymph nodes both above and below the diaphragm
Stage 4: disease that has spread beyond the lymph nodes and spleen to one or more organs

While many treatment strategies are similar for lymphomas, some treatment options are unique to NHL. For individuals who have no obvious symptoms and the disease is discovered at an early stage, watchful waiting may be the initial treatment option. This means that no treatment is needed right away except for periodic exams and close observation for any changes.

NHL	Hodgkin lymphoma
• Watchful waiting • Chemotherapy • Radiation therapy • Peripheral blood stem cell transplantation • Clinical research studies • Immunotherapy	• Chemotherapy • Radiation therapy • Combined chemotherapy and radiation therapy • Peripheral blood stem cell transplantation • Clinical research studies

Today, more than 75 percent of people who receive initial treatment for lymphoma experience a complete *remission*. The success rate for treatment of early-stage Hodgkin lymphoma, when the disease has not advanced beyond a single lymph node area, is 80 to 90 percent.

A variety of treatment options are available, including new treatments available to those who participate in clinical research studies. It is important for individuals to talk with their doctor about treatment options and goals.

Healthy Holiday Foods

This year use the holiday season to improve your health by incorporating more "cancer-blocking" foods into festivities. The below foods are good sources of *antioxidants, phytonutrients, omega 3 fatty acids,* fiber and/or other nutrients that have been known to fight cancer.

- Sweet potatoes
- Pumpkin
- Winter squash
- Cranberries
- Dried fruit
- Dark chocolate
- Salmon
- Shrimp
- Nuts
- Wild rice
- Popcorn
- Clementines and other citrus fruits

Healthy Eating Suggestions

- Serve sweet potatoes or winter squash as a side dish. Deep orange vegetables are loaded with beta carotene.
- Make pumpkin or cranberry tea bread. Pumpkin contains more beta carotene than any other food, and cranberries contain antioxidants.
- Serve cranberry relish or sauce as a condiment or side dish; use cranberry juice in the holiday party punch.
- Give a box of clementines as a gift.
- Snack on popcorn. Did you know that popcorn is a whole grain?
- Wild rice is also a whole grain. Use it for soups, stuffing or as a side dish.
- Make a dip out of smoked salmon.
- Serve shrimp along with raw vegetables. Don't forget the cocktail sauce and salsa. Tomatoes are an excellent source of lycopene, vitamin C and potassium.
- Add dried fruits and nuts to salads.
- Consider making dips made from legumes, such as hummus, which are good sources of fiber and other phytonutrients.
- Make a snack mix out of dried cranberries, almonds and dark chocolate bits. All nuts are high in antioxidants, protein, fiber, healthy fats, vitamins and minerals.
- Use dark chocolate and walnuts in baked goods. Dark chocolate has more antioxidants than milk chocolate. These are known as flavonols or phenols.

And, it is okay to eat sugar in moderation. Contrary to popular belief, sugar does not feed cancer. However, if you are overweight, too much sugar can contribute to unwanted and unnecessary calories.

Margaret Adams

Radioimmunotherapy as a treatment option for non-Hodgkin lymphoma

By Carol Chaffin

With the twelfth anniversary of her original diagnosis approaching, Adams is feeling healthy and positive.

As a former high school math instructor, solving problems is something that has always come naturally to Margaret Adams. Having taught geometric formulas and algebraic equations to high school students for nearly 40 years, she knows a thing or two about finding answers.

So when in the spring of 1996 she was told that she had stage IV non-Hodgkin lymphoma, the process of solving a tough problem suddenly became very personal.

"I started not being able to breathe well, so I went to my doctor," says Adams. "I certainly didn't expect that diagnosis, but I have the will of a person who accepts things and I dealt with it."

Adams underwent treatments for seven months — intensive chemotherapy for the first four months; chest and upper abdominal radiation therapy for the next three. Adams continued to teach school at the beginning of her treatment and even took a college course after the school year ended, but it was a bounty of willpower that kept her going. After teaching in Massachusetts for 25 years and in Ft. Lauderdale another 11, she decided it was time to retire to focus on her health. Adams and her husband moved to the Jacksonville area to make it easier to receive ongoing treatments at Mayo Clinic in Florida.

"Not teaching was difficult," says Adams. "It was who I was, and I did it for so many years."

The treatment worked, though, and Adams' cancer was dormant for nearly a decade. The Adamses moved back to Lauderdale-by-the-Sea and had been there for about two years when she felt two enlarged lymph nodes on her neck under her left ear. On Valentine's Day 2005, a biopsy was taken; the cancer had *recurred*. This time her Mayo Clinic

oncologist, Dr. Gerardo Colon-Otero, told her about a new radioactive iodine treatment called BEXXAR.

BEXXAR was approved by the Food and Drug Administration in 2003 for patients with CD 20 positive, B-cell, follicular non-Hodgkin lymphoma who have relapsed following chemotherapy.

Instead of months of treatment, she could have a single course of *radioimmunotherapy* over one to two weeks. She would not lose her hair, but she would have to live with a new side effect — being radioactive for a few weeks.

"BEXXAR is an intravenous *monoclonal antibody* that's directed against the proteins located in lymphoma cells," says Colon-Otero. "The *antibodies* are coupled with a radioactive iodine substance. Monoclonal antibodies identify the bad cancer cells and attach to them; then the radioactive iodine gives off radiation and kills them. It's a double-whammy approach against non-Hodgkin lymphoma."

Adams' body could emit low levels of radioactivity for about seven to 12 days. She would have to be in isolation. That meant being in separate rooms when her husband was at home, frequently washing her hands, using gloves while cooking, doing separate laundry and avoiding being in public.

"I was apprehensive at first because of the possible side effects, and it was a long process for me to decide that this was the right treatment," says Adams. "But I did a lot of research and learned as much as I could about it."

In the end, the equation was simple. One treatment plus a therapy that showed early signs of success in patients who had a recurrence added up to a solution she wanted to try. Mayo Clinic radiation oncologist Dr. Steven Buskirk administered a small dose of BEXXAR through an IV in her arm and then took a series of body scans over a few days to determine where the cancer was located and how much of the solution Adams would need to fight it. On her final visit, Buskirk gave her the major infusion, which lasted about 90 minutes, and discharged her home.

"The anxiety was the most difficult part," says Adams. "I felt no extreme nausea, fatigue or illness during treatment. The isolation was lonely, but I got through it."

Her enlarged lymph nodes shrunk within two weeks. Follow-up tests three and six months later showed no sign of cancer.

"She has responded very well," says Buskirk. "These targeted therapies are being developed because they make more sense and are very effective. The idea is to get a high dose of radiation to the cancer and a low dose to the surrounding healthy cells. Targeting the cancer cells directly with the 'smart bomb' approach versus treating large areas with radiation and using different types of chemotherapy is the new way of thinking."

Buskirk says that the BEXXAR treatment can only be used once in a patient's lifetime. Two-thirds of patients respond to it — one third have a long-term, multiyear remission and the other third respond with about a two year remission.

"Hopefully she'll get another long-lasting remission," says Colon-Otero.

With the twelfth anniversary of her original diagnosis approaching, Adams is feeling healthy and positive. She spends time reading, walking on the beach, riding her bicycle, and exercising three times a week at a fitness center. She even keeps the old No. 2 pencil sharpened for when her teenage grandson needs a little help with algebra.

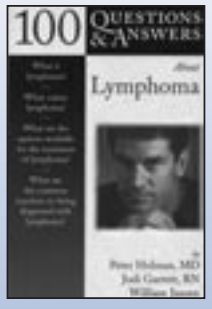
She keeps her sense of humor sharpened, too. "Instead of being radioactive, now I'm just active!" jokes Adams. "I say 'Hey, hey, let's go'!"

Cancer Terms

Antibody	A type of protein made by plasma cells (a type of white blood cell) in response to an antigen (foreign substance). Each antibody can bind to only one specific antigen. The purpose of this binding is to help destroy the antigen.
Antioxidant	A substance that protects cells from damage. Antioxidants include beta-carotene, lycopene, vitamins A, C, and E, and other natural and manufactured substances.
Diaphragm	The thin muscle below the lungs and heart that separates the chest from the abdomen.
Lymphatic system	The tissues and organs that produce, store, and carry white blood cells that fight infections and other diseases. Lymphatic vessels branch, like blood vessels, into all the tissues of the body.
Monoclonal antibody	A type of protein made in the laboratory that can locate and bind to substances in the body, including tumor cells. They can be used alone or to carry drugs, toxins, or radioactive materials directly to a tumor.
Omega 3 fatty acid	A type of fat obtained in the diet and involved in immunity.
Phytonutrient	Plant-derived compound associated with positive health effects.
Radioimmuno-therapy	A type of systemic radiation therapy in which a radioactive substance is linked to an antibody that locates and kills tumor cells when injected into the body.
Recurrence	Cancer that has recurred (come back), usually after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body.
Remission	A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although cancer still may be in the body.

Definitions obtained from www.cancer.gov. Defined terms are in italics in newsletter.

Resources



Books

100 Questions & Answers about Lymphoma by Peter Holman, M.D., Jodi Garrett, R.N. and William Jensen, 2004.

Living with Lymphoma: A Patient's Guide by Elizabeth M. Adler, Ph.D., 2005.

Web Sites

Leukemia & Lymphoma Society — www.lls.org
Lymphoma Information Network — www.lymphomation.org
Lymphoma Research Foundation — www.lymphoma.org
Mayoclinic.com: Tools for Healthier Lives — www.mayoclinic.com

Celebrating Life During the Holidays

By Angela Young, American Cancer Society patient navigator

People often view the holidays as a time to celebrate, give and receive gifts, reunite with family and friends, and celebrate religious traditions. However, the season can be a stressful time if you or a loved one is faced with cancer. Cancer survivors and their families often ask themselves questions such as:

- How do I take care of the holiday rush and myself at the same time?
- How can I celebrate when I have so many other things on my mind?
- What will my life be like next year during this time?

This year, take time to enjoy yourself and those you love. Consider trying these tips:

Simplify the Holidays

- Create a new holiday tradition that makes the most of your energy, such as planning potluck dinners or dining at a favorite restaurant
- Buy your holiday treats to reduce the amount of time you spend baking and decorating
- Shop online or via catalogues
- Send seasonal cards, such as New Year's or Valentine's Day

Live in the Moment

- Understand your limitations and be gentle on yourself
- Don't feel obligated to live up to others' expectations
- Express your love in more direct ways than gifts
- Rededicate yourself to your spiritual growth

Share the Hope

- Volunteer your time at a local nursing home or soup kitchen
- Instead of gifts, donate to a local charity or adopt a needy family
- Invite someone to your holiday celebration who you know is alone

Remember to try and find comfort, peace and joy in those areas of your life that mean the most to you.

For more information about making the most of the holidays, visit the American Cancer Society at www.cancer.org or Cancer Care at www.cancercare.org, or contact your American Cancer Society patient navigator at 800-227-2345.

Celeste "CC" Chervenka
Mayo Clinic
Arizona

Jeri Lensing
Mayo Clinic
Rochester

Kelly McGuire
Mayo Clinic
Rochester

Angela Young
Mayo Clinic
Rochester

Calendar of Events

February 2009

15 *26.2 with Donna: The National Marathon to Fight Breast Cancer*
Jacksonville Beach, Fla.
904-355-PINK (7465)
www.breastcancermarathon.com

March 2009

14 *2009 Silent No More Marathon Swim to benefit the MN Ovarian Cancer Alliance*
Rochester Area Family Y
Rochester, Minn.

National Colon Cancer Awareness Month
Prevent Cancer Foundation
800-227-2732
www.preventcancer.org/colorectal

May 2009

15 *Stay Out of the Sun Run*
Rochester, Minn.
www.sosrun.org

16 *Melanoma Public Education Symposium*
Mayo Clinic
Rochester, Minn.
507-284-2241

together Spotlight


Dr. Timothy Call

In January 2000, a small group of staff from Mayo Clinic Cancer Center sat down to talk about how to provide patients improved access to cancer education and resources — no matter where they lived. Dr. Timothy Call, from the Division of Hematology, volunteered to lead the group's efforts. Nearly nine years later, we are pleased to report that we now publish three newsletters annually for more than 5,000 subscribers across the nation.

Dr. Call has faithfully served as medical editor for each issue of **together**. He has guided our growth and ensured that the newsletter's mission hasn't wavered. His vision and steadfast support have brought the newsletter to the forefront of one of the nation's leading medical institutions. It is with mixed emotions that we share that Dr. Call is finishing his term as medical editor of **together** with this issue.

With gratitude and respect, the **together** editorial board recognizes Dr. Timothy Call for his leadership and support, and thank him for his compassionate vision in developing this valued resource. We wish him the best as he continues focusing his clinical expertise in education, practice and research with the Division of Hematology at Mayo Clinic in Rochester.

together

Medical Editor:
Timothy G. Call, M.D.
Hematologist/Oncologist

Managing Editors:
Nicole Bennett Engler
Cancer Education Program Communications Consultant

Sarah Christensen
Patient Education Specialist

Kelli Fee-Schroeder
Cancer Education Program Educator

Sheryl Ness
Cancer Education Program Manager

Editorial Review Board:
Carol Ann Attwood
Medical Librarian
Carol Brueggen
Certified Oncology Clinical Nurse Specialist
Julie Earle
Radiation Oncology Nurse
Wayland Eppard
Patient Advocate
Deborah A. Johnson
Cancer Education Program Administrative Assistant
Mary E. Johnson
Chaplain
Kelly McGuire
American Cancer Society Navigator
Nancy Pick
Oncology Supervisor, Clinical Operations
Robin Peck
Hematology/Oncology Outpatient Nursing Supervisor
Jacalyn See
Registered Dietitian

The mission of Mayo Clinic Cancer Center is to provide compassionate, state-of-the-art care for the patient with cancer today and continued advancements in the prevention, diagnosis, treatment and cure of cancer in the future. The programs and services of the Cancer Center span the three Mayo Clinic campuses in Arizona, Florida and Minnesota.

together newsletter provides educational information for cancer patients, their family, caregivers and friends. Physicians, staff and cancer patients write the articles. To view the **together** newsletter online, visit www.mayoclinic.org/cancer-education-rst.

To submit story ideas, provide feedback or unsubscribe, call (507) 266-9288 or e-mail canceredprog@mayo.edu.

MAYO CLINIC
Cancer Center

4500 San Pablo Road
Jacksonville, Florida 32224

200 First Street SW
Rochester, Minnesota 55905

13400 East Shea Boulevard
Scottsdale, Arizona 85259

MC1604-0908

cancercenter.mayo.edu