The Advancing Science of Radiation Therapy
Hypofractionation Offers Promise

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Allies in Getting Treatment Paid for

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Hotline Support  |  Reimbursement Assistance  |  Patient Assistance
Indications and Usage
ZEVALIN® (ibritumomab tiuxetan) injection for intravenous use is a prescription medication that has three parts: two treatments of rituximab and one treatment of Yttrium-90 (Y-90) ZEVALIN. Rituximab is used to reduce the amount of B-cells in your blood and Y-90 ZEVALIN is given to treat your non-Hodgkin’s lymphoma (NHL).

The ZEVALIN therapeutic regimen is used to treat patients with:
- Recurring, low-grade or follicular B-cell NHL, after other anticancer drugs are no longer working.
- Newly diagnosed follicular NHL following a response to initial anticancer therapy.

Important Safety Information

The ZEVALIN treatment can cause serious side effects including:
- **Serious Infusion Reactions:** Rituximab, alone or as part of the ZEVALIN treatment, may cause serious infusion reactions. Deaths have occurred within 24 hours of rituximab infusion, an important component of the ZEVALIN treatment. Tell your doctor or infusion nurse or get medical treatment right away if you develop fever or chills, a rash, itching, dizziness, swelling of your hands, feet or face, throat irritation or trouble breathing during or after receiving the ZEVALIN treatment.
- **Extended and Severe Decreases in Your Blood Counts (Cytopenias):** Your doctor will monitor your blood counts after receiving the ZEVALIN treatment. Decreased blood counts can occur late and continue for more than 12 weeks after receiving ZEVALIN. Tell your doctor if you have a fever, feel too tired to do daily activities, feel weak, develop bruises, have unusual bleeding or notice blood in your urine or stool.
- **Severe Skin or Mucous Membrane Reactions:** If you experience any reactions related to your skin or mucous membranes (e.g. mouth, nose), your infusion of rituximab and Y-90 ZEVALIN should be discontinued.

**Dosing Warning:** The dose of Y-90 ZEVALIN should not exceed 32.0 mCi (1184 MBq).

Please see brief summary for ZEVALIN on adjacent pages. Because ZEVALIN treatment includes the use of rituximab, please see the rituximab medication guide (www.rituxan.com).
CONSUMER BRIEF SUMMARY

Read this brief summary about ZEVALIN before you start therapy with the ZEVALIN® (ibrutinomab tiuxetan) therapeutic regimen and before each part of the regimen. Information on the ZEVALIN therapeutic regimen may change, so always talk with your doctor about your medical condition or treatment. Ask your doctor if you have any questions about your treatment with the ZEVALIN therapeutic regimen.

What is the most important information I should know about the ZEVALIN therapeutic regimen?

The ZEVALIN therapeutic regimen can cause serious side effects including:

- **Serious Infusion Reactions**: Rituximab, alone or as part of the ZEVALIN therapeutic regimen, may cause serious infusion reactions. Deaths have occurred within 24 hours of rituximab infusion, an important component of the ZEVALIN therapeutic regimen. Tell your doctor or infusion nurse or get medical treatment right away if you develop fever or chills, a rash, itching, dizziness, swelling of your hands, feet or face, throat irritation or trouble breathing during or after receiving the ZEVALIN therapeutic regimen.

- **Extended and Severe Decreases in Your Blood Counts**: Your doctor will monitor your blood counts after receiving the ZEVALIN therapeutic regimen. Decreased blood counts can occur late and continue for more than 12 weeks after receiving ZEVALIN. Tell your doctor if you have a fever, feel too tired to do daily activities, feel weak, develop bruises, have unusual bleeding or notice blood in your urine or stool.

- **Severe Skin Reactions**: Severe skin reactions, some fatal, can occur within a few days to 4 months after treatment with the ZEVALIN therapeutic regimen. Tell your doctor, infusion nurse or get medical treatment right away if you develop sores on your skin or in your mouth or if your skin is peeling or blistering during or after receiving the ZEVALIN therapeutic regimen.

See the section of this document entitled “Possible side effects of the ZEVALIN therapeutic regimen” for information on other serious side effects.

What is the ZEVALIN therapeutic regimen?

The ZEVALIN therapeutic regimen is a prescription medication that has three parts: two treatments of rituximab and one treatment of Yttrium-90 (Y-90) ZEVALIN. Rituximab is used to reduce the amount of B-cells in your blood and Y-90 ZEVALIN is given to treat your non-Hodgkin’s lymphoma (NHL).

ZEVALIN therapeutic regimen is used to treat patients with:

- recurring, low-grade or follicular B-cell NHL after other anticancer drugs are no longer working.
- newly diagnosed follicular NHL following a response to initial anticancer therapy.

The safety and effectiveness of ZEVALIN in children has not been studied. The maximum dose of Y-90 ZEVALIN you should get is 32 mCi (1184 MBq).

What should I tell my doctor before treatment with ZEVALIN?

Tell your doctor about all of your medical conditions, especially if you:

- Had a severe infusion reaction to rituximab in the past.
- Are taking any medications that increase your risk of bleeding such as aspirin or warfarin.
- Have, or have recently had, an infection.
- Have recently received a vaccination or are scheduled to be vaccinated. It is recommended that you do not receive a live vaccine for 12 months after receiving the ZEVALIN therapeutic regimen.
- Are pregnant or planning to become pregnant. The ZEVALIN therapeutic regimen may cause harm to an unborn child. Use effective birth control during treatment and for at least 12 months after treatment.
- Are breastfeeding. It is not known if the different parts of the ZEVALIN therapeutic regimen pass into human breast milk. A decision should be made to discontinue breastfeeding or not to treat with the ZEVALIN therapeutic regimen.

Tell your doctor about all substances you are currently taking, including prescription and nonprescription medications, vitamins or herbal supplements. Tell your doctor about all medical conditions that you have.
How do I receive the ZEVALIN therapeutic regimen?

- All parts of the ZEVALIN therapeutic regimen are given through a needle placed in a vein (IV or intravenous) in your arm. Rituximab is given as an IV infusion two times before Y-90 ZEVALIN is given as an IV injection. Ask your doctor for details on how and when each part of the ZEVALIN therapeutic regimen is given.

- Your doctor will prescribe medications (called premedications) before each dose of rituximab given as part of the ZEVALIN therapeutic regimen. These medications are given by mouth and consist of acetaminophen (like Tylenol®) and diphenhydramine (like Benadryl®) and need to be taken as prescribed and are important to decrease infusion-related side effects.

- After you get the ZEVALIN therapeutic regimen you will have weekly blood tests for up to 3 months. These blood tests are to check for potential side effects of the ZEVALIN therapeutic regimen.

- Your doctor will educate you on special precautions to take after treatment with radioactive drug.

Possible side effects of the ZEVALIN therapeutic regimen:

Some of the serious and life-threatening side effects of the ZEVALIN therapeutic regimen have already been described in the section entitled “What is the most important information I should know about the ZEVALIN therapeutic regimen?” Other potential serious and life-threatening side effects include:

- Extravasation: Extravasation happens when some of the drug in an IV infusion or injection, or the vein it is being injected into, leaks into the surrounding tissue. Immediately tell your doctor or infusion nurse if you have burning, pain, stinging, redness or swelling around the site in your arm where your medication is being given by vein.

- Leukemia and Myelodysplastic Syndrome: Sometimes following treatment for NHL, patients develop leukemia (cancer of the blood) or myelodysplastic syndrome (blood production disorder). This has been reported in patients that have received the ZEVALIN therapeutic regimen. Be sure to discuss this potential serious and life-threatening side effect with your doctor.

- Infections: The ZEVALIN therapeutic regimen may increase your chance of getting an infection. Be sure to tell your doctor immediately if you develop a fever, have a cough or have any flu-like symptoms.

- Creutzfeldt-Jakob Disease (CJD): The ZEVALIN therapeutic regimen contains a protein made from human blood. Based on effective donor screening and product manufacturing processes, ZEVALIN carries a very low risk for transmission of viral diseases or CJD (a brain disease). No cases have ever been identified.

The most common side effects of ZEVALIN are:

- Decreased blood counts
- Tiredness
- Stomach pain
- Nausea
- Weakness
- Diarrhea
- Cough
- Fever
- Nose and upper throat irritation

If you experience any of these side effects, please discuss them with your doctor. These are not all of the side effects of the ZEVALIN therapeutic regimen. Ask your doctor for more information on side effects. Also, since rituximab is given as part of the ZEVALIN therapeutic regimen, talk with your doctor about the potential side effects of rituximab.

General information about ZEVALIN:

This brief summary describes the most important information about the ZEVALIN therapeutic regimen. It is possible for your doctor to prescribe the ZEVALIN therapeutic regimen for purposes other than those listed in this summary.

If you have questions or want more information, talk with your doctor. You can also visit www.ZEVALIN.com or call 1-866-298-8433.

You are encouraged to report negative side effects of prescription drugs to the FDA at www.fda.gov/medwatch or call 1-800-FDA-1088.

What are the components of the ZEVALIN Therapeutic Regimen?

The ZEVALIN therapeutic regimen consists of the following parts:

- Rituximab, given two times prior to Y-90 ZEVALIN;
- Y-90 Chloride Sterile Solution, ZEVALIN (ibritumomab tiuxetan) and Sodium Chloride Solution.

Manufactured by:

Spectrum Pharmaceuticals, Inc.
157 Technology Drive
Irvine, California 92618

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– Jeffrey Lukens, M.D.
Body Radiologist

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COVER STORY
The Advancing Science of Radiation Therapy
Today’s highly advanced treatment technologies translate into life-saving therapies for Minnesota Oncology’s patients.

Hypofractionation
Fewer radiation treatments using higher doses may enhance outcomes.

FEATURE
Patient Financial Counselors
With the costs of cancer care continuing to climb, Minnesota Oncology’s patient financial counselors are invaluable resources for patients struggling with the financial hardships cancer can present.

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ON THE COVER
From left to right: Dr. Mark A. Palmer, Dr. Kathryn Farniok, Dr. Warren A. McGuire, Dr. Ellen E. Bellairs and Dr. Vic Liengswangwong — Radiation Oncologists

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Visit www.mnangel.org for more information.

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**MY LUNG CANCER IS PROGRESSING**
**MY THERAPY IS CRITICAL**
**MY TIME IS VALUABLE**
**MY BLOOD HAS ANSWERS**

**Tell your patients about Angel Foundation.**

Through an innovative and integrated approach of financial assistance, education, and support, Angel Foundation helps adults with cancer and their families so that they may live life well with stability, strength and resilience.

Visit www.mnangel.org for more information.
Cancer treatment is constantly evolving with new drugs and technology that provide better treatment outcomes. In radiation therapy, there have been great advances in the technology that allow us to provide more-focused treatments, such as intensity-modulated radiation therapy (IMRT) and stereotactic techniques. The radiation dose to the tumor site can be increased, while toxicity to normal tissues is minimized. Hypofractionation approaches, in which fewer treatments are given with higher doses of radiation at each treatment, can also enhance the effectiveness in some situations. As seen in the articles herein, these state-of-the-art techniques are available to our patients at the Maplewood Cancer Center and the St. Paul Cancer Center, under the direction of our highly qualified radiation oncologists and their team of physicists, dosimetrists and radiation therapists. Minnesota Oncology strives to make the best available technology accessible to the patients we serve.

Cancer treatment is very expensive, and even when we can put the cancer in remission and eventually restore the patient to good health, the financial strains are often overwhelming. If one is dealing with the side effects of radiation or chemotherapy or is recovering from surgery, working may be impossible. Even with good insurance, the loss of income can be devastating, such that the family cannot meet its everyday living expenses.

The ultimate result can be bankruptcy. While we have known for some time that a diagnosis of cancer places patients at risk of financial disaster, quantification of that risk and which groups are at greatest risk has not been well characterized. At the ASCO 2011 meeting, a formal study of the issue was presented that provides more precise information. For our patients who are living with cancer and undergoing treatment, the economic realities can add tremendous stress to the already-overwhelming impact of a cancer diagnosis. The study analyzed the rate of bankruptcy after a cancer diagnosis and identified the factors that increased the risk among common malignancies. Looking at more than 200,000 cancer cases with an average follow-up of 4.3 years, they found that bankruptcy filing rates varied from 3.6 percent to 7.7 percent depending on cancer type.

At Minnesota Oncology, we are fortunate to have patient financial counselors who do an outstanding job of helping our patients through the complex issues related to insurance coverage and co-insurance and providing them with the help they need to access programs that can pay some or all of their treatment costs. Policies are also in place that allow for reduced payments on the part of indigent patients.

Cancer patients in this community are also fortunate to have access to the Angel Foundation, which was established specifically to provide financial support to individuals going through cancer treatment who need help paying for rent/mortgage, groceries or other living expenses.

The treatment of cancer can be a costly undertaking, and we know patients feel the financial strain. Still, I have to believe that the programs we have in place are helping to lessen that strain and are allowing our patients to focus more of their energy on getting well.

Thomas P. Flynn, MD
President
Minnesota Oncology
The Advancing Science of Radiation Therapy

by John Miller, MS, DABR

Dr. Warren McGuire visits with a patient prior to treatment.
Radiation therapy uses high-energy radiation to kill cancer cells by damaging their DNA. Healthy cells are also vulnerable to radiation, so it is extremely critical that the treatments are carefully planned to minimize such side effects. Recent advancements in radiation treatment methods offer options that greatly enhance accuracy, reach and curative capability of radiation treatments.

Radiation Therapy’s Significant Role in Treating Cancer
Radiation therapy is one of the many tools used to combat cancers. Using high-energy waves such as X-rays to kill cancer cells, radiation can be used alone or in conjunction with other treatments (e.g., chemotherapy and surgery) to cure or stabilize cancer. The choice to use radiation to treat a particular cancer depends on a wide range of factors, including the type of cancer, the physical state of the patient, the stage of the cancer and the location of the tumor.

A patient may receive radiation therapy before, during or after surgery, depending on the type of cancer being treated. Radiation therapy given after surgery is called post-operative or adjuvant radiation therapy. It is also common to combine radiation therapy with other treatment interventions such as surgery, chemotherapy, hormone therapy, immunotherapy or some combination of these.

Upward of 60 percent of all cancers can be treated with radiation therapy. Advances in treatment methodology in recent years make it possible to meticulously target tumors in a way that reduces damage to surrounding tissue. Gaining access to complex tumors that may be wrapped around sensitive structures such as the spinal cord can be a challenging assignment. With today’s highly advanced techniques, amazing results can be achieved.

Goals of Radiation Therapy
There are several different possible goals of radiation treatment:

- Curative: For curative purposes, treatment is usually prolonged. Reactions to the radiation treatment may range from mild to severe.
- Palliative (relief from symptoms): Seeks to relieve symptoms of the cancer and to extend survival, making life more comfortable. Frequently, this type of treatment is done to prevent or eliminate pain caused by cancer that has metastasized to bones.

Radiation Therapy – It’s Personal

This is a note received by the radiation therapy staff at Maplewood Cancer Center from a patient.

Dear Radiation Team,

Words can’t express the gratitude and admiration I have for all of you. Ironically, you made my visits enjoyable. I’ve said it more than once that you’re all saints for what you do and your demeanor while doing it. Before I met all of you, I was really dreading the radiation treatments — but within a few days I realized that you were very special people, and that it wasn’t going to be that bad.

And while I hope that I never have to see you again professionally, I am going to miss you all. You were all a great way to start my day.

God’s blessing on all of you — and keep doing what you’re doing.

Larry
Meet Minnesota Oncology’s Radiation Oncologists

Ellen E. Bellairs, MD
Board Certification – Radiation Oncology
Areas of Special Interest
- Intracranial and extracranial radiosurgery
- Lung cancer
- Breast cancer
- Female cancers
- Gastrointestinal cancer
- HDR brachytherapy

Kathryn Farniok, MD
Board Certification – Radiation Oncology
Areas of Special Interest
- Breast cancer
- Brain and spinal cord tumors
- Gastrointestinal cancer
- Head and neck cancer
- SBRT and SRS
- HDR brachytherapy

Vic Liengswangwong, MD
Board Certification – Radiation Oncology
Areas of Special Interest
- Breast cancer
- Gastrointestinal cancer
- Lung cancer
- Stereotactic radiosurgery and radiation therapy
- HDR brachytherapy

Warren A. McGuire, MD
Board Certification – Radiation Oncology
Areas of Special Interest
- Head and neck cancer
- Prostate cancer
- Brachytherapy

Mark A. Palmer, MD
Board Certification – Radiation Oncology
Areas of Special Interest
- Prostate cancer
- Breast cancer
- Lung cancer

(651) 414-3163 for Referrals
• Radiation versus Surgery: Radiation is sometimes used instead of surgery in a limited number of cancers and is most effective if the cancer is caught early while still small and non-metastatic. Radiation may be used instead of surgery if the location of the cancer makes surgery difficult or impossible to perform without severe risks to the patient.

Surgery is the preferred treatment for lesions that are located in an area where radiation treatment might be more damaging. Surgery can be performed quickly after a diagnosis, while radiation treatment may take weeks to achieve its full effect.

The radiation therapy team — a collaboration of highly-skilled specialists ... The overall success of a course of radiation therapy depends on many different departments working together in a coordinated and collaborative fashion. A great deal of skill and collaboration on the part of each professional is essential to achieve an optimal outcome.

• Radiation oncologist: The radiation oncologist is a board-certified subspecialty physician who leads the treatment team. They consult with the medical oncologist, the surgeon, the radiologists and others to prescribe an individualized course of treatment for the patient. The radiation oncologist closely monitors the progress of the patient and makes any modifications necessary to assure an optimal outcome. Radiation oncologists require an extra five years of specialized training beyond college and medical school. Board certification is required.

• Radiation therapist: The radiation therapist works under the supervision of the radiation oncologist and administers the daily treatments to the patient. They may also be involved in the patient's simulation process (by which treatment fields are defined, filmed and marked out on the patient's skin). Radiation therapists go through either a two- or four-year program that requires many hours of on-the-job training. They must also be certified in their specialty.

• Radiation oncology nurses: Radiation nurses work closely with the physicians and therapists in the care of patients and their families. They are specially trained to assess how the patient is doing throughout the entire process and to provide support and counseling. Radiation nurses are licensed and many times have additional specialty training and certification.

• Certified medical physicist: The medical physicist works closely with the radiation oncologist and the dosimetrist to develop the best treatment plan for each patient. They are responsible for the implementation and quality control of all specialized therapy types. Physicists make sure that equipment is functioning properly and that accurate calibrations are maintained. They also implement and maintain the radiation safety program for each department. After college, a master's degree is required. The certification for this area sometimes requires up to five years of clinical experience and a series of exams in order to be board-certified.

• Dosimetrists: Dosimetry is a highly specialized field that deals primarily with the computer-based planning process. Dosimetrists work under the direction of the medical physicist and the radiation oncologist to develop the best complex plan for each patient. Dosimetrists are also involved in the patient simulation process and ensure that the patient is properly immobilized throughout the course of radiation therapy treatments.

Looking Forward – Promising New Therapies

Like all medical specialties, the field of radiation therapy continues to advance. Many new modalities are being studied to find more effective treatments for cancer and other conditions that may be treated with radiation. Tremendously encouraging developments are in the works with hypofractionation, which refers to the delivery of high doses of radiation in a smaller number of fractions — typically one to five fractions. Linear accelerators are being developed that deliver doses much faster with the potential to treat patients within minutes. Such high dose rates show promise with tumor radiobiology, killing more tumor cells than the standard radiation-delivery techniques.

Another area of research that is resurfacing is the search for tumor-localizing agents that contain a non-radioactive isotope that has the ability to capture neutrons. After the drug is delivered, the patient is irradiated with neutrons, resulting in a biologically destructive reaction within the tumor. One such therapy is called boron-neutron-capture therapy.

The latest research in radiation deals with nanoparticles (infinitesimal particles invisible to the naked eye). Due to their size, and taking advantage of tumor-cell biology, these particles can only penetrate the tumor cells, sparing normal healthy cells and avoiding the systemic side effects often associated with chemotherapy drugs. Nanotechnology may eventually develop nanomaterials that serve as multifunctional carriers to deliver therapeutic radioisotopes for tumor-targeted radiation therapy and monitor their delivery and the tumor's response to the treatment.
The three main divisions of radiation therapy are:

- **External-beam radiation therapy**
- **Brachytherapy** (sealed-source radiation therapy)
- **Systemic radioisotope therapy** (unsealed-source radiotherapy)

Differences relate to the position of the radiation or radioactive source; external is outside the body, brachytherapy uses sealed radioactive sources placed precisely in the area under treatment, and systemic radioisotopes are given by infusion or oral ingestion. Within these divisions, many therapy modalities can be found.

**EXTERNAL-BEAM RADIATION THERAPY**

External-beam radiation therapy (EBT) is a method for delivering a beam or several beams of high-energy X-rays to a patient’s tumor. Beams are generated outside the body, usually by a linear accelerator, and are targeted at the tumor site. EBT is commonly used to treat breast, colorectal (bowel), head and neck, lung, prostate, and brain tumors.

3-D conformal radiation therapy is a treatment technique that sculpts the radiation beams to the shape of a tumor. This is ideal for tumors that have irregular shapes or that lie close to healthy tissue and organs.

Intensity-Modulated Radiation Therapy (IMRT) is an advanced form of 3-D conformal radiotherapy that uses sophisticated software and hardware to vary the shape and intensity of radiation delivered to different parts of the treatment area. It is one of the most precise forms of external beam radiation therapy available.

Image-Guided Radiation Therapy (IGRT) is the process of using an on-board imager (OBI) to localize the target before the delivery of IMRT or IMAT treatment each day. This allows the physicians to draw tighter margins on their tumor volumes, thus reducing the dosage to healthy tissue. IGRT is an essential localization component of delivering very high doses (SRS/SRT/SBRT) of radiation to tumor volumes as well.

Intensity-Modulated Arc Therapy (IMAT)/Volumetric-Modulated Arc Therapy (VMAT) is the use of IMRT delivered to the targeted area while the gantry of the linear accelerator rotates around the patient, resulting in multiple radiation beams being delivered to the specific tumor area more rapidly. This new technology reduces treatment times significantly, minimizing discomfort to the patient.

Stereotactic Radiosurgery (SRS)/Stereotactic Radiation Therapy (SRT)

SRS is a highly precise form of radiation therapy used primarily to treat tumors and other abnormalities of the brain. Despite its name, SRS is a non-surgical procedure that delivers a high-dose of precisely-targeted radiation to the tumor with sub-millimeter accuracy, minimizing the effects on healthy brain tissue. SRS can frequently be completed in a one-day session. Sometimes, due to tumor location and/or size or number of lesions, it may be advantageous to deliver the dose in three to five fractions to the brain.

Analogous to SRT for the brain, Stereotactic Body Radiation Therapy (SBRT) is a form of radiation therapy where high doses are delivered to lung or abdominal tumors, typically in three to five fractions.

Respiratory Gating Movement (RPM) is an advanced technology that allows the tumor motion of the patient to be tracked relative to his or her breathing cycle. This allows accurate and precise delivery to a moving target, with potential to reduce radiation dose to healthy cells.

**BRACHYThERAPY**

Brachytherapy is a special procedure that uses a radioactive source to treat the tumor or cancer. The advantage of brachytherapy is placing the radioactive material close to the target, thus offering a rapid fall-off of dose from the radioactive source. The source may be implanted (intratissually, such as the prostate), placed inside of a body cavity, (intracavitarily, such as the mouth or uterus) or externally (on the surface of an area, such as an eye or skin).

High-Dose-Rate Brachytherapy (HDR) uses very highly radioactive sources to deliver treatments in a very short time. Remote afterloaders are usually used for this procedure, which have the advantages of thorough radiation protection and allowing outpatient treatments. The radioactive source travels to the applicator, which is placed within or on the tumor site, delivers the dose and retracts back into its housing.

Therefore, after the dose is delivered, there is no residual radioactivity in the patient. Examples of HDR are gynecologic tumors for patients with endometrial or cervical cancers, prostate, breast, mouth or nose, scalp, and skin.

Low-Dose-Rate Brachytherapy (LDR) requires that the radioactive source to be temporarily or permanently inserted into the patient. The radiation is delivered slowly over a few days or months and is often performed as an outpatient procedure. Prostate-seed implants are a common example of LDR.

**OTHER THERAPIES**

Zevalin therapy is a targeted cancer therapy called radioimmunotherapy that combines the use of a monoclonal antibody and a radioisotope to target and destroy specific cells. This is used to treat advanced, relapsed or malignant lymphoma.

Cyberknife uses a computer-controlled robotic arm to target tumors to deliver radiation. It is a type of a linear accelerator. The arm will slowly move around the patient to the various locations from which it will deliver radiation to the tumor. Each treatment session lasts between 30 and 90 minutes. This modality is commonly used for intracranial benign and malignant tumors as well as spine lesions, but it can also be used for other tumors as well.

Gamma Knife is a very precise and effective instrument that uses radiation to treat the brain and is often called radiosurgery. Using this method, doctors are able to focus radiation directly, and very precisely, on the target in the brain without affecting surrounding healthy tissue. MRI imaging is used to establish the treatment target for Gamma Knife surgery, and the patient’s head is immobilized in a head frame to assure accuracy.

Proton therapy uses a particle accelerator to target the tumor with a beam of protons. The charged particles damage the DNA of cells, interfering with their ability to proliferate. Cancer cells are particularly vulnerable because of their high rate of division and their inability to repair DNA damage. Protons, due to their heavy mass, focus on the tumors at depth and have potential benefit of reducing dosage to healthy tissue. Proton therapy is used for ocular tumors, paraspinal tumors and unresectable sarcomas.
Hypofractionation involves giving larger doses of radiotherapy per fraction but giving fewer fractions. During the past six years, we have seen an explosion of interest in hypofractionation — to the degree that two-thirds of existing reports on this method were published within this period. Interest has accelerated as evidence across multiple tumor sites has been extremely positive for tumor control and similar, if not reduced, toxicity. In particular, extreme hypofractionation of greater than 5 Gy per fraction is proving to be more effective than anticipated, probably because of additional effects on endothelial cells, stem cells, hypoxia and cytokine release that enhance immunologic, bystander and abscopal activity. Although there is much clinical evidence of the efficacy of hypofractionation, there is still a need to further optimize the delivery of high doses of radiation in a hypofractionated setting without affecting the tolerance of normal tissues.

The Changing Landscape in Radiation Treatments
The new dose-delivery technologies and improved computer and imaging capabilities are changing the landscape of radiation oncology treatments. The development of multiple variant machines with high-precision, computer-driven, intensity-modulated radiotherapy (IMRT)/image-guided radiotherapy (IGRT), combined with image-guided treatment planning and respiratory tracking and gating, has extended the repertoire of dose-delivery strategies available to radiation oncologists and has encouraged innovative treatment approaches, leading to stereotactic radiosurgery (SRS), stereotactic radiotherapy (SRT) and stereotactic body radiotherapy (SBRT). Using CT, MRI and PET/CT, we are diagnosing malignant lesions earlier in staging, which gives radiation oncologists the chance to target smaller tumor volumes with hypofractionation. Via complex precision machines, such as linear accelerators with imaging capabilities as well as much-improved frame-based or frameless immobilization methods, we can deliver high doses of radiotherapy to a much smaller tumor volume and spare healthy tissue. Of particular interest are the promising early results using ablative oligofractionated doses for early-stage non-small-cell lung cancer, liver metastases, spine radiosurgery and those of more moderate hypofractionated regimens delivered by SBRT or high-dose brachytherapy (HDR) to prostate and breast cancer.

Treating Skull-Based Tumors
Earlier approaches for hypofractionated radiotherapy (HRT) commenced using frame-based SRS, where single-fraction high-dose radiotherapy was successfully administered for patients with skull-based tumors. In recent years, SRT and particle-beam therapy has been used to treat such lesions. Most skull-based tumors are very well demarcated from surrounding normal structures and brain parenchyma and are therefore well-suited for highly conformal techniques. For meningioma patients, various studies show tumor control rates of 90 percent and higher for five and 10 years utilizing SRS.1,2 Similar outcomes have been published for vestibular schwannoma patients.4,5 Patients with glomus tumors treated with SRS alone show tumor control rates of 95 percent or higher published by UCSF and Johns Hopkins University.6,7 Excellent tumor control rates of 92 percent or higher have been published for pituitary adenomas; however, reported endocrine cure rates are lower.8 Craniopharyngiomas treated with SRS showed a local control rate of 85 percent or higher, however, most of the studies have relatively short follow-up times.9 The data on dose tolerance for hypofractionated SRT other than SRS are very limited, and significant uncertainty still exists in regard to the actual tumoricidal effect and resulting toxicities to the critical structures using alternative regimens for treatment of skull-based tumors.

Treating Brain Metastases
Brain metastases represent a very common and devastating complication of cancer. Despite advances in neurosurgery, radiology, medical and radiation oncology, the outcomes of these patients remain poor. Although the use of whole-brain radiation therapy (WBRT) has been shown to be a valuable adjunct to SRS and surgery and provides effective palliation for patients with brain metastases, the use of SRS has increased for many patients with this disease, given the concerns regarding the effect of neurocognition with WBRT. Multiple randomized trials have corroborated the role
of SRS for patients with one to four brain metastases. An intergroup study by the North Central Cancer Treatment Group (N0574) is a phase-III study randomizing patients with one to three brain metastases between SRS alone versus SRS followed by WBRT (clinicaltrials.gov, NCT003771156). Although local and distant brain control is inferior without the use of WBRT, no significant impact on survival and quality of life appears to exist. Given the controversy surrounding the optimal management of patients with brain metastases, all patients with brain metastases should be considered for any open clinical trials.

**Treatment of Spinal Metastases**

Approximately 40 percent of all cancer patients will develop spinal metastases. In North America, the prevalence of spinal metastases is more than 100,000 patients each year. The vast majority of this disease is extradural. Radiotherapy is an important aspect of the treatment paradigm for spine metastases. Conventionally fractionated radiation, typically delivered in one or two fields, is useful for palliation, but the dose of radiation is limited by spinal cord tolerance. Radiotherapy for the treatment of metastatic spine disease is a rapidly developing treatment modality. SBRT appear to convey better tumor control than conventional radiotherapy for tumors considered radiosensitive. A systematic review of literature for both conventional radiotherapy as well as radiosurgery for metastatic spine disease was published in 2009. Twenty-nine single-institution case series that had been published to date were carefully examined. Radiosurgery for metastatic spine disease was determined to be safe and effective with durable symptomatic response and local control for even radiosensitive histologies, regardless of prior fractionated radiotherapy. Furthermore, a recommendation was made that radiosurgery should be considered over conventional fractionated radiotherapy for the treatment of metastatic spine metastases in the setting of oligometastatic disease and/or radiosensitive histology in which no relative contraindications exist. Patients tolerate very high-dose radiation when image-guided techniques can be utilized to minimize the volume of normal tissue, including spinal cord, that is irradiated.

**Hypofractionation and Liver Metastasis**

Hepatocellular carcinoma (HCC) is the fourth-most common cancer in the world. It is responsible for 19,000 deaths annually in the United States alone. Historically, the radio sensitivity of normal liver, kidneys and bowel leads to a limitation in the dose to primary tumor, and, therefore, attempts to control cancer involving the liver by radiation was associated with dismal results. Historically, HCC has been considered a radio-resistant disease; however, it is now accepted that such tumors are radiosensitive, providing that high-enough dose is delivered to the tumor. Results from single-institution experience on hypofractionated SBRT for patients with HCC are published in the literature. The Indianapolis University experience is the biggest series of patients treated by SBRT. A phase-I/II trial was done where 60 patients with liver-confined HCC were treated with SBRT, and, after a median follow-up time of more than two years, excellent disease control was seen, with two-year local control of 90 percent.
progression-free survival of 48 percent and overall survival of 67 percent. Due to liver motion, centers with excellent respiratory gating programs with the use of IGRT should be utilized to treat with SBRT. Further clinical trials should be done to better define benefits to our patients with HCC.

Clinical Trials in Breast Cancer
Breast cancer is the most common cancer in women and prostate cancer for men. Changing the standard recommendation of six to nine weeks of radiotherapy to a shorter regimen results in higher compliance and tremendous cost-saving. Most radiation oncology programs are conducting clinical trials in this field, and evidence about safety and efficacy of a shorter approach to breast and prostate radiotherapy is emerging. For breast cancer treatments, two separate clinical approaches have emerged: whole-breast radiotherapy (WBRT) and accelerated partial-breast irradiation (APBI). NYU 01-51, 03-30, 05-181 and 09-0030, along with the Canadian hypofractionation trial, have emerged and are still accumulating patient data. These trials demonstrated 10-year invasive-cancer local recurrence rates of 6.2 percent, and hypofractionated WBRT was not inferior to conventional radiotherapy in terms of survival; specifically, there were no observed differences in breast cancer mortality or deaths from other causes, such as cardiac events. Long-term cosmetic appearance was considered good to excellent in approximately 70 percent of women, and there were no reported differences in 10-year skin and subcutaneous tissue complications. APBI was developed as a technique that targeted only the lumpectomy cavity with a 1- to 2-cm margin and could provide excellent local control. Treatments for APBI are currently done via HDR or external-beam radiotherapy and are completed in 10 fractions delivered twice per day. Currently, the National Surgical Adjuvant Breast and Bowel Project (NSABP) B-39/Radiation Therapy Oncology Group (RTOG) 0413 trial is accruing patients with stage-I to -II invasive ductal carcinoma or ductal carcinoma in situ, randomizing patients to WBRT or APBI, and results of this very large study should be published within couple of years. ASTRO has published guidelines for patients who are suitable, cautionary, and unsuitable for APBI.

Prostate Hypofractionation Trials
In terms of prostate hypofractionation, three studies published since 2003 provide relevant practice data. Moderate hypofractionation experience with RTOG 94-13 and the Cleveland Clinic demonstrated efficacy, therapeutic gains and safety. Further, much-higher-dose fractionation studies are also accumulating patient data using the stereotactic treatments. Overall toxicities for these studies were acceptable and similar across all hypofractionation levels. Based on these preliminary results, RTOG is opening a phase-II randomized study, 0938, using two hypofractionated regimens: five fractions given twice per week and 12 daily fractions over 2.5 weeks. At this juncture, hypofractionation treatment of the prostate, whether it is moderate or high, appears to be a well-tolerated, cost-effective approach.

Non-Small-Cell Lung Cancer
The historic approach to patients with medically inoperable early-stage non-small-cell lung cancer (NSCLC) has been conventionally fractionated radiation alone, with large-field doses including the known tumor target as well as lower radiation doses to elective nodal regions, regardless of stage. However, results with this approach have been very poor, with five-year survival of 20 percent or less, even in patients with early-stage disease. This is in stark comparison from the superior outcomes in operable patients who undergo surgery, with a five-year survival up to 70 percent. Initially, RTOG 0236, and then 0813 and 0915, studied SBRT lung treatments in one to five fractions. Initial findings show local tumor rates of 90 percent or better, which is a tremendous improvement over conventional radiotherapy. The National Comprehensive Cancer Network (NCCN) has established guidelines for NSCLC SBRT at http://www.nccn.org/professionals/physician_gls/l_guidelines.asp. More moderate hypofractionation techniques are being studied for locally advanced NSCLC patients, as RTOG and North Central Cancer Treatment Group (NCTCG) studies presented no survival benefit for dose escalation using conventional fractionation techniques. Prospective trials that are being accrued utilize concurrent chemotherapy, which factors to be very important.

In summary, hypofractionation is an exciting development in radiation oncology that is proving to be crucial in improving survival rates for our patients. Interdisciplinary approach between medical and radiation oncology is the key. Patient selection is vital for safety and clinical outcome. The National Cancer Institute extensively supports clinical trials in a variety of cancers and technology development, physics and radiobiology research. Patients and our physicians are strongly encouraged to participate in those clinical trials seeking to determine if hypofractionation radiation therapy helps cancer patients live either longer or better quality of life. Some examples are RTOG-0413 and RTOG-1005 for breast cancer, RTOG-0938 for prostate cancer, RTOG-1021 for lung cancer and RTOG-0631 for cancers metastatic to the spine. Hypofractionation radiotherapy utilizing SRS, SRT, SBRT and HDR should be administered under very stringent quality-control guidelines. The success of the program relies on a safety-first approach and physics/dosimetry competency, as well as careful, detailed work on the part of the radiation therapy team.

Hypofractionation Treatment Modalities Available at Minnesota Oncology
- St. Paul Cancer Center: Frameless SRT, SBRT and HDR (GYN, prostate, breast, skin)
- Maplewood Cancer Center: Frame-based and frameless SRS, SRT, SBRT and HDR (GYN, skin)

References
6. Roos DE, Potter AE, Zacect AC. Hearing preservation after low dose LINAC radiosurgery for acoustic
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References:
1. February 2011 Walgreens patient data
   * Unapproved hospital admission, delayed or missed dose, equipment/product failure, adverse drug reactions and pharmacy issues.

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A recent study from the National Institutes of Health revealed that the cost of cancer care in the United States is projected to reach $158 billion in the year 2020. This figure is based on the current rate of U.S. population growth and aging of the population and represents an increase of 27 percent over 2010. If new diagnostic tools are developed or additional costly treatments are introduced, the medical expenditures could reach $207 billion (Journal of the National Cancer Institute, January 12, 2011).

How do these staggering figures translate down to the single-family level — or to one individual who is reeling from the shock of hearing he or she has cancer? How does a family cope with the cost of care along with the stress of having cancer?

The Costs of Cancer
Receiving a diagnosis of cancer can be devastating, but finding the resources needed to pay for care to restore one’s health can be even more overwhelming. There was a time when having health insurance was enough to insulate most people with cancer from financial ruin. Now those who can still afford health care coverage often find their benefits are being trimmed while their co-pays and deductibles are increasing. Many people are unaware that even though they have health insurance coverage through their employer, deductibles, co-pays and co-insurance can put them over the edge financially.

It is not unusual for each treatment in a given regimen to cost thousands of dollars, with the patient frequently being responsible for a co-pay of 20 percent for treatment. In addition, insurance deductibles, co-insurance and co-pays for imaging studies can quickly mount to staggering figures.

The Patient Financial Counselor – An Ally for Families Facing Cancer
Helping find the resources they need to obtain cancer treatment is a service provided to all patients at Minnesota Oncology. One of the key members of our care team is the Patient Financial Counselor, or PFC, as they are commonly called. Beginning at the time of diagnosis, the PFC works with each patient to help them become familiar with their insurance program and the estimated costs of care, and to set up a workable plan before treatment begins. Having such a plan helps set the patient’s mind at ease so he or she can focus on getting well.

Patient Financial Counselors
Allies in Getting Cancer Treatment Paid for
by Etta Erickson

Terri Oachs, a PFC at Minnesota Oncology’s Minneapolis Clinic, loves her work and has deep compassion for families facing a health crisis. “No one can adequately prepare themselves mentally or emotionally — let alone financially — for a diagnosis of cancer,” Terri observes. “It is our job to help our patients gain a full understanding of their insurance coverage, its limitations and what is their responsibility. If they do not have adequate resources, we try to find ways to help bridge the gap. Our patients are often surprised and grateful to have this one-to-one assistance available to them. It gives them back a sense of control when their world has just been turned upside down.”

One recent situation Terri managed describes how people can be caught off-guard by unexpected illness. “I was able to help a 47-year-old gentleman who had stopped working for a few months to care for his ailing grandmother. He allowed his insurance to lapse because he felt fine and appeared to be in good health. A short time later, he began to experience a nagging sore throat and was subsequently diagnosed with lung cancer. His only financial asset was his 401(k) retirement account that totaled $24,000. The drugs required for his care would normally have cost $23,000 per treatment, but by accessing the patient assistance programs, I was able to get the costs for his chemo reduced to just $4,000 per treatment.”

Each of Minnesota Oncology’s 10 clinic locations has one or more patient financial counselors on staff. Most new patients at Minnesota Oncology meet with a PFC, who is available to consult with them at any time during or after their course of treatment. During/following the patient’s first consultation visit, the patient’s oncologist chooses a specific treatment regimen. This information is immediately conveyed to the PFC, who goes to work to find a way to obtain coverage for that treatment.

Getting Treatment Paid for – “Tricks of the Trade”
Immediately upon receiving a copy of the oncologist’s chosen treatment regimen, the patient financial counselor begins constructing the plan. The first line of defense...
is the patient’s health insurance policy. The PFC examines the drug compendia to make sure that the treatment requested by the oncologist is on the insurance plan’s list of approved drugs. In the event that the patient’s insurance does not pay for the recommended therapy, the PFC works with the oncologist to find a drug that is covered by insurance. If the PFC discovers that there is no insurance coverage and no personal resources to cover the cost of care, she begins to tap other resources through formal patient assistance programs (PAPs) sponsored by pharmaceutical companies, which provide free or discounted medicines for low to moderate income, uninsured and underinsured people who meet the guidelines.

**Drug replacement** refers to situations where the drug is given, and if the insurance company denies payment, the drug company replaces that drug to the clinic at no charge. **Free drugs** are provided to patients who are uninsured. The drug is shipped to the clinic by the drug company specifically for that individual patient.

Many of the pharmaceutical companies also offer co-pay cards for patients who cannot afford the co-pay amount that accompanies each treatment. For example, if the cost of a treatment is $2,000, and the co-pay is 20 percent, the patient would normally have had to pay the entire amount. The co-pay card pays for 80 percent of the out-of-pocket cost. Some also offer co-insurance cards. These additional resources are not available to everyone. Normally, the income qualifier is an annual household income of less than $100,000.

**Government Programs**

The PFC works closely with another important member of the care team, the oncology social worker. If it appears the patient will be eligible for Social Security or for Social Security disability, the social worker will assist the patient in making application. For some who do not qualify for a Social Security program, a medical assistance or Medicaid application is necessary. Again, the social worker can assist the patient with that application process.

Dawn Bushnell, Patient Financial Counselor at Fridley Clinic, takes a great deal of satisfaction in the effective teamwork she experiences while getting her patients the help they need. It often involves many phone calls, a great deal of paperwork and extensive coordination with outside parties to accomplish the goal. Dawn cites a situation where she collaborated with a clinic in Texas in order to get a patient’s long-term treatment need met. She recalls, “This was a male patient, age 76, who has been receiving Leukine (a blood growth factor used to accelerate the recovery of white blood cells following chemotherapy) since 2006. His insurance stopped paying for it so I registered him with the patient assistance program at Genzyme, the company that makes the drug. The patient has been able to get the drug he needs and can self-inject at home, and has been doing extremely well with this treatment. Since the patient winters in Texas, I was able to coordinate with the staff at the South Texas Cancer Center to obtain the drug and avoid an interruption in treatment.”

Lisa Prigge was promoted to the Patient Financial Counselor role at Minnesota Oncology’s Woodbury Clinic after several years experience working as a receptionist, scheduler, and Patient Service Representative. “I consider it a privilege and a pleasure to help our patients,” she says. “The PFC role is most fulfilling for me in many ways, because I love being able to ease their financial burden. I see the relief on their faces when they know we are here to partner with them and walk with them on this difficult journey.”

**Community Grant Programs**

We are fortunate that Minnesota is home to a very high number of charitable organizations, many of which are committed to helping patients and families facing cancer. Such organizations will frequently give cash grants to patients in treatment who are struggling to buy groceries or to put gas in their cars while paying for their treatment. These programs do not help with medical costs, but instead provide cash for household expenses, such as groceries and child care so that the patient is free to come to the clinic for chemotherapy. Angel Foundation is a local charitable organization whose sole mission is to help families dealing with cancer. Local hospital foundations often hold special fundraisers to provide resources for patients going through treatment.

**Cancer Care Today**

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Kids Kamp 2012 was the first event I attended as a student evaluator for the Minnesota Evaluation Studies Institute (MESI), a program of the University of Minnesota that is working with Angel Foundation to measure and assess the impact of the many programs Angel Foundation offers to families as they navigate the cancer experience. Kids Kamp is Angel Foundation’s annual three-day camp for children 5 to 18 who have a parent with cancer. This retreat gives campers the opportunity to “just be kids.”

“What inspires you?” was the theme of Kids Kamp this year, held August 7-9. Words cannot explain the transformations I witnessed between the first day, when all of the kids were a bit apprehensive and perhaps dreading coming to camp, to the last day, when they sat close to new friends and sent their hopes, worries and wishes up to the universe.

The primary goals of Kids Kamp are to: (1) increase self-efficacy in children with parents who have cancer, (2) decrease the feelings of isolation for children of parents with cancer and (3) most important, to have FUN! Many of the parents and teen mentors expressed that the first time children come to camp, they sometimes come kicking and screaming, worried that the next three days of their lives will be filled with support groups and talks about cancer. However, by the end of the three days, they often do not want to leave and wish they had more time to finish their art projects, hang out with new friends and play games.

Clearly, Kids Kamp accomplishes much more than its main goals. In talking with parents, volunteers and kids, I learned three things about Kids Kamp:
• Kids Kamp is a place where you can just be a kid
• Kids Kamp is a place where you make lifelong friendships
• Kids Kamp is a place where everyone understands what you are going through

During the next few weeks, my colleague, Chris Pleasants and I will be compiling information from our notes, meetings with volunteers and teen mentors, and surveys from kids and parents to provide tangible data to support the impact and transformations made at Kids Kamp every year.

We would like to especially thank all of the volunteers, staff members and teen mentors for their willingness to meet with us, as well as all of the kids and families for their help in understanding how their lives have been touched by Angel Foundation.
Bands Against Cancer

by Etta Erickson

It is heartening to see what the vision and determination of three talented young people can accomplish. On July 27, a high-energy event was held on the rolling green park lawn adjacent to the Blaine City Hall. This was the site for the 2012 Bands Against Cancer fundraiser, an event planned, executed and hosted by three amazing young people who are high school students from Spring Lake Park. They are Chris Nguyen, Huda Khatoon and Nicholas Plantz – three straight-“A” students at Spring Lake Park High School who have been friends since kindergarten and who hold a common dream of using their gifts to make the world a better place.

Bands Against Cancer featured several music groups, including the Appalachians, Mother Earth, Bleed the Lizard and solo vocalists. A variety of music, including classic rock, hip-hop, rock alternatives, the Beatles and some golden oldies entertained people from the community who enjoyed a beautiful summer afternoon as they lounged in the soft green grass of Town Square Park.

Last year, he was responsible for another successful event known as Bands for Cans, where hundreds of cans of food were collected for the Food Shelf. Chris will enter college as a junior after he graduates high school next spring, having completed his first two years of college at Anoka Ramsey Junior College. He plans to major in biological sciences at the U of MN, and then hopefully on to medical school at the U. “It is the sense of productivity and making a difference — one step at a time — that keeps me moving,” Chris declares. “I have a vision for what could be — the possibilities. I seek opportunities to build, improve and adjust things — to mold reality into what I see it can be.”

Nick is a senior at Spring Lake Park High with similar interests as his friends. He is an excellent student who also has his eye on attending the University of Minnesota when he graduates next spring. Physics is Nick’s field of study. He, Huda and Chris form a lively trio of ambitious young people who are dedicated to using their gifts to improve the world around them.

Bands Against Cancer was a successful event that raised $2,000 for Angel Foundation, a charitable organization that supports families facing cancer with monetary grants and kids programs.
Relaying Hope
Minnesota Oncology was on hand to support the American Cancer Society Relays For Life in White Bear Lake, South Washington County/Woodbury, Anoka, Blaine, Burnsville and Stillwater over the summer months. Minnesota Oncology staff and physician volunteers were on hand to promote cancer awareness and offer information and to give away items to the participation teams and survivors’ families. Relays For Life raise both community awareness about cancer and much-needed funds for the American Cancer Society’s many services.

Komen 3-Day Walk
Beth Berg from our Minneapolis Clinic was in shape and ready to roll as a participant in this year’s Komen 3-Day walk in late August. The Maplewood Cancer Center staff sponsored a Cheering Team, which turned out in full force — loud and proud — at 7 a.m. to root for Beth and the other walkers.

Miles for Melanoma
New this year was the Twin Cities Miles for Melanoma race/walk on August 11 at the Como Zoo in Roseville. Our team of volunteers set up at two locations to support the runners. Minnesota Oncology physicians were represented by Dr. Tom Amatruda, who gave a brief speech, as well as Dr. Uzma Ali and Dr. Dave King.

Healthy skin care and protection were promoted by the sponsors, with free skin examinations, fresh fruit and sun visors, along with Minnesota Oncology’s signature bandanas and sunscreen. Race
participation exceeded expectations, as 150 people registered to take part and 206 people arrived on race day. A total of $37,000 was raised for melanoma research and education.

Rally for the Cure
The gorgeous gals of Minneapolis Clinic had fun sharing the Minnesota Oncology spirit with others while fielding two golf teams at Rally for the Cure hosted by Superior National at Lutsen in support of the Susan G. Komen Breast Cancer Foundation. The clinic staff raised $1,100 by hosting jean days, popsicle sales, cheesecake raffles and other fun events.

A Breath of Hope Lung Run/Walk
A perfect summer morning on August 18 was the backdrop at Lake Calhoun, the site of this year’s A Breath of Hope Lung Run/Walk. The turnout was the largest yet in the seven-year history of the event, raising $70,000 for lung cancer awareness and research. We are proud to recognize Dr. Louis Jacques, Dr. Matt Graczyk and Minnesota Oncology, who were major sponsors of this community cancer-awareness event.

MOCA Silent No More 5K
The Minnesota Ovarian Cancer Alliance Silent No More Walk/Run was held on Saturday, September 8, 2012, at Rosland Park in Edina. This event raises funds for ovarian cancer research, community awareness and education for women and their families touched by ovarian cancer. The Minnesota Oncology tent was very popular once again, giving out 3,000 teal blue bandanas to the participants and guests. Minnesota Oncology has been a participating sponsor of this event since 1999.

Sixth Annual Patient Appreciation Week Is Celebrated
A September highlight at Minnesota Oncology is the annual celebration of Patient Appreciation Week. This year, each of our clinics found its own unique way of making the week special for patients and staff members. Sweet treats, raffles, prizes and even putt-putt golf in designated areas of one enterprising clinic added to the festivities. Patients and staff members alike were inspired by art displays in each clinic from Lilly on Canvas, a collection of memorable and touching artwork created by cancer survivors and shared by Eli Lilly Pharmaceuticals.
New Providers at Minnesota Oncology

Dr. Jocelin Huang
Dr. Jocelin Huang has joined our physician team, practicing at our Edina and Waconia clinics.

Dr. Huang received her medical degree from the University of Chicago’s Pritzker School of Medicine and comes to us from the Mayo Clinic in Rochester, where she recently completed her fellowship in oncology and hematology.

Areas of special interest to Dr. Huang include the treatment of colorectal, pancreatic and hepatobiliary cancers, as well as breast cancer, multiple myeloma and lymphoma.

Dr. Michaela Tsai
The provider team at the Minneapolis Clinic was expanded in September with the arrival of Dr. Michaela Tsai. A board-certified medical oncologist and hematologist, Dr. Tsai comes to us from the Park Nicollet Institute, where she served as Medical Director for Oncology Research.

In addition to her practice at Minnesota Oncology, Dr. Tsai has been chosen to assume the Martha Bacon Stimpson Chair at the Virginia Piper Cancer Institute, providing leadership and expertise for breast cancer clinical research.

Dr. Tsai received her medical degree from Harvard Medical School and also holds degrees in chemistry and religion from Duke University. At the University of Minnesota, she completed a fellowship in medical oncology, hematology and transplant with post-graduate studies in epidemiology, biostatistics and clinical-trial design.

Her areas of special interest include genetic counseling for hereditary breast and ovarian cancer syndromes, clinical research and hematologic malignancies.

Julie Cavey, CNP
Meet Julie Cavey, CNP, who joined the Maplewood team in August. Julie most recently worked at the University of Wisconsin Breast Center.

She holds a master of science degree in nursing from the University of Wisconsin, Madison, Wisconsin, as well as a bachelor of science degree in nursing from Valparaiso University, Valparaiso, Indiana, and she is board-certified as an adult nurse practitioner.

Meghan Lawless, PA-C
The newest member of the Thoracic Oncology/surgery team at the Minneapolis clinic is Meghan Lawless, PA-C. Meghan comes to us from the Minneapolis Heart Institute, where she worked in the Thoracic and Transplant Surgery unit for four years.

She holds a master of medical science degree in physician assistant studies from Midwestern University in Downers Grove, Illinois, as well as a bachelor of arts degree in anthropology and pre-professional studies from the University of Notre Dame, South Bend, Indiana.

Krista Nuessle, PA-C
The Coon Rapids clinic welcomes Krista Nuessle, PA-C, to its team. Krista most recently worked as a family practice physician assistant at West Side Community Health Services in St. Paul.

She holds a master of physician assistant practice degree from Rosalind Franklin University of Medical Sciences in Chicago, Illinois, as well as a bachelor of arts degree in biological sciences from Bethel University in Arden Hills, Minnesota.

Heather Penning, CNP
New to the Maplewood Cancer Center is Heather Penning, CNP, who joined the provider team in June, working in the Radiation Oncology department of the clinic.

Prior to coming to Minnesota Oncology, Heather worked at the Hubert Humphrey Cancer Center as an oncology nurse practitioner, primarily in the chemotherapy and stem-cell-transplant areas.

Heather holds both a bachelor of science degree in nursing and a master of science degree in oncology nursing from Viterbo College in La Crosse, Wisconsin. Her adult/gerontologic nurse practitioner post-graduate certificate was earned at the College of St. Catherine, St. Paul, Minnesota.

St. Paul Cancer Center Installs HDR
St. Paul Cancer Center is proud to announce the addition of HDR (high-dose-rate brachytherapy) to its profile of radiation-therapy treatment modalities. HDR can be used for gynecologic, breast, prostate, skin and various other types of cancer and can significantly reduce the amount of time required for treatment.

Welcome to Chris Johnson, New Clinic Manager at St. Paul Cancer Center
Chris B. Johnson has assumed the business leadership role at St. Paul Cancer Center. She has served in health care leadership roles for the past 13 years, most recently as Director of Operations at Summit Orthopedics. Her managerial experience encompasses positive leadership, strategic planning, clinic operations and physician/employee relations, as well as facility design/remodel, project management and revenue-cycle management.
Mpls.St. Paul Magazine Highlights Outstanding Nurses in the Twin Cities

Two Minnesota Oncology nurses were chosen as finalists in the Outstanding Nurse competition by *Mpls.St. Paul magazine*. They were Cindy Olive from Maplewood Cancer Center and Michele O’Brien from Edina Clinic.

Nominations of nurses who have demonstrated excellence in their field were solicited from local hospitals, private practices, nursing homes and educational institutions. Finalists were chosen to represent 19 different nursing categories (from cardiovascular to women’s health). Cindy and Michele were honored at a formal dinner reception in July and were profiled in the August issue of the *Mpls.St. Paul* magazine.

Heidi Ganzer, Registered Oncology Dietitian, Will Present Research Findings

The Academy of Nutrition and Dietetics invited Heidi Ganzer, Registered Oncology Dietitian, to present findings from her research study, *The Symptom Burden over Time in Head and Neck Cancer Patients*, during its national conference in October.

Dr. Astrid Garino Speaks at the BCAA Conference

Dr. Garino from our Coon Rapids Clinic led a workshop at the 11th Annual Twin Cities Breast Cancer Awareness Conference held at the Saint Paul River Center on October 6th. Dr. Garino spoke on Surviving Breast Cancer. Dr. Garino leads the Survivorship initiative in her clinic — a program that focuses on meeting the physical, psychosocial and spiritual needs of patients from the time of diagnosis, throughout the course of treatment, and beyond.