

# Evansville Cancer Center Works with Medical Community During March for Colorectal Cancer Awareness Month!

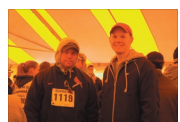


Tom Holonich, a colorectal cancer patient at the Cancer Center and spokesperson for this year's awareness messages airing on television and radio, poses with Syam Chilukuri, M.D., his physician from OVC&RS.

March is recognized nationally as colorectal cancer awareness month. Evansville Cancer Center/Vantage Oncology partnered with several medical professionals, devoted our entire marketing efforts throughout the month of March, and contributed lots of volunteer time from the Cancer Center's physicians and staff with one simple message in mind, by promoting education and prevention of colorectal cancer and encouraging people to get a colonoscopy, it could very well save lives! In fact, across all medias (television, radio, newspaper), Evansville Cancer Center/Vantage Oncology reached over half a million people with this important message!

Evansville Cancer Center was proud to partner with Ohio Valley Colon and Rectal Surgeons in collaboration with the American Cancer Society to bring Coco the Colossal Colon to Washington Square Mall Tuesday, March 6th through Sunday, March 11th. The week featured field trips for kids, a colorectal cancer survivors' luncheon, and a health fair.

Coco the Colossal Colon is a crawl-through replica of the human colon created by Molly McMaster, a colon cancer survivor who was diagnosed on her 23<sup>rd</sup> birthday and is dedicated to the memory of Molly's friend Amanda Sherwood Roberts who died at age 27 of colorectal cancer. It was designed to educate the public about colorectal cancer with examples of healthy colon tissue, non-cancerous diseases, polyps and the various stages of colorectal cancer.



Evansville Cancer Center was also proud to support the Colon Cancer Awareness Walk/Run on Saturday, April 7th sponsored by Gastroenterology Associates. Gastroenterology Associates hopes to make the walk/run an annual event with the purpose to continue to raise awareness of colorectal cancer. When detected early, colorectal cancer is the most treatable of all cancers, with a 90 percent success rate. The key is early detection!



## ■ EVANSVILLE CANCER CENTER RADIATION ONCOLOGISTS

Al Korba, M.D., FACRO, Aly Razek, M.D., FACRO, Jon D. Frazier, M.D. & Shannon Lamb, M.D.

## MEDICAL ONCOLOGIST

Rick Ballou, M.D., Ph.D.

## RADIATION PHYSICISTS

Saiyid Masroor Shah, Ph.D. & Arnold Sorensen, B.S.

■ HENDERSON CANCER CENTER - Shannon Lamb, M.D., Radiation Oncologist & Rick Ballou, M.D., Ph.D., Medical Oncologist

■ TRI-COUNTY CANCER CENTER - JASPER - Crystal Reed, M.D., Radiation Oncologist

# REGIONAL Oncology Update

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## Image Guided Radiation Therapy (IGRT) at Evansville Cancer Center



Jon D. Frazier, M.D.

Dr. Frazier is a Radiation Oncologist who recently joined Evansville Cancer Center after relocating in Evansville from South Bend, Indiana. He received his medical degree from University of Chicago, Pritzker School of Medicine in Chicago, Illinois. Dr. Frazier completed his residency in General Surgery and Radiation Oncology at The University Hospitals of Cleveland, Case Western Reserve University School of Medicine in Cleveland, Ohio. He did his fellowship in brachytherapy at Memorial Sloan-Kettering Cancer Center in New York, New York. In addition to external beam radiation, Dr. Frazier specializes in brachytherapy of the head and neck, lung, breast, cervix, uterus, vagina, and prostate. He is certified by the American Board of Radiology in Therapeutic Radiology.

Modern imaging has revolutionized radiation therapy. Where we once shot in the dark at tumors based on experience and simple radiographic references, we now use multi-modality imaging such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Positron Emission Tomography (PET) to help identify tissues to treat and/or avoid. By using 3-D treatment planning and Intensity Modulated Radiation Therapy (IMRT) our goal is to reduce treatment related

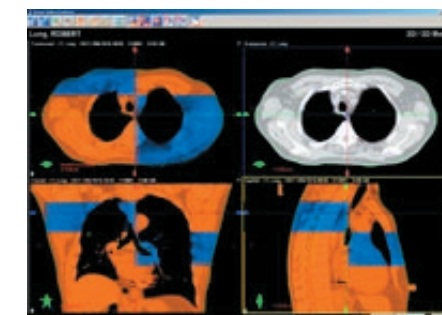


toxicity and safely increase dose to tumors with improved chances of local control. This is accomplished by the development of highly detailed plans that practically sculpt the doses around the tumor.

To achieve this goal, we construct a patient model from the multi-modality images in the computer contouring organs that are at risk as well as the tumor. Our treatment planning objectives are to irradiate malignant

tissues while sparing adjacent normal anatomy. But patients aren't static models with clearly defined borders between tumors and normal tissue. Rather they are quite dynamic with variations in shape and location. Due to the limitations in our positioning ability (typically, skin markings are the first means of approximating tumor location for initial positioning for each treatment fraction), changes in tumor and normal organ position due to physiological motion (breathing, heart beat, rectal and bladder physiology), and the long term changes such as weight loss and tumor volume reduction in response to treatment demands attention.

To ensure that the tumor is adequately treated, we must irradiate a larger volume than the initial imaged tumor volume and, deliver high doses to normal organs with elevated toxicity risk. New technology addresses this problem. On-Board Imager (OBI) automated systems obtain high resolution x-ray images using kilovoltage (kV) to identify precise tumor location while automatically adjusting patient position when necessary. This improves on previous technology which used megavoltage (mV) portal images which produced cloudy images. This can be used with fiducial markers, which are gold seeds implanted in the tumors to pinpoint internal



Using the split screen tool to verify the match after the automated algorithm has completed the image registration. Color blending has been used to make identification of the CBCT images (blue) compared to the reference CT images (orange) easier.

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Evansville Cancer Center is the only ACR accredited cancer facility in the entire Tri-State area!

700 N. Burkhardt Road, Evansville, Indiana 47715

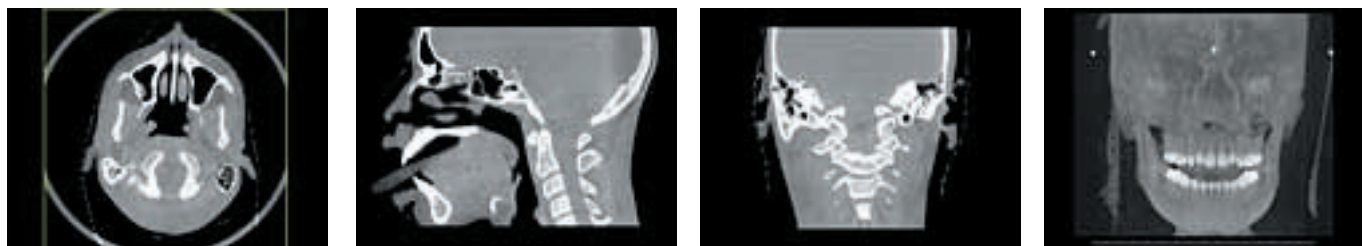
Vantage Oncology

Evansville Cancer Center

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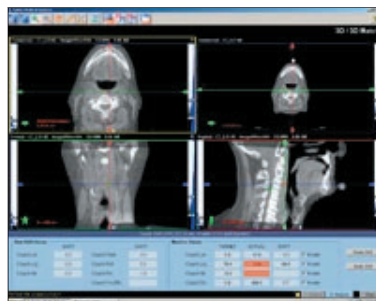
tumor positioning immediately prior to treatment. OBI has been used in treatment of prostate cancer to target the prostate when dose is escalated to improve cure rates while minimizing the radiation dose to the surrounding normal tissues particularly the bladder and rectum.



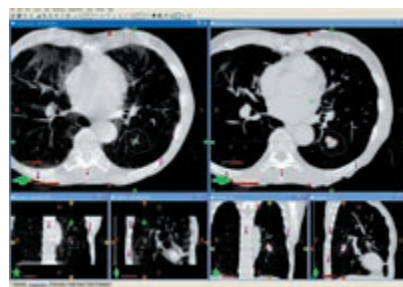
Cone-beam CT images of a patient with nasopharyngeal carcinoma.

Another new system is cone beam CT imaging produced by the OBI system rotating around the patient and using the generated images to reconstruct a tomographic data set. With this approach, images can produce a 3-dimensional anatomic section that is 14 to 17 cm wide. This data can be co-registered with the planning data set CT images, facilitating the movement of the patient into the precise position for the treatment. This is particularly useful in treating tumors in the head, neck, prostate, breast and lung. When the patient has been placed in the treatment position, differences of the tumor location and size between the CT planning images and the IGRT reference images may be determined automatically using advanced registration and positioning software. The treatment couch may be adjusted automatically before the treatment begins. Such precision minimizes the margin around the tumor and helps reduce positioning variation. Cone beam CT images can also be used to monitor contour changes which allow us to replan in order to develop the smallest margin around the tumor and minimize the dose to surrounding normal tissues.

These advances in beam delivery and imaging have allowed higher doses to be targeted to tumors while avoiding normal tissue that previously had to be included in the extra margin required for movement and set up. These advances increase the quality of life for patients. In head and neck cancer, for example, the new technologies help avoid excessive irradiation of the salivary glands. In prostate cancer, improved imaging and beam control help avoid bladder injury, cystitis, as well as rectal complications such as proctitis. This process works quite well for tumors in rigid areas where there is not much motion, such as the head and neck or retroperitoneal areas. Tumors in soft tissue may require another approach.



CBCT images of a patient being treated in the head and neck region.



CBCT images of a patient being treated in the lung using a stereotactic body radiation therapy technique.

Respiratory gating with Image Guided Radiation Therapy (IGRT) is used to treat tumors that move with respiration. First, a CT scan with a 4-D scanner that creates a cine-CT loop is performed to analyze the movement of the tumor as it correlates with the respiratory cycle using an external beacon taped to the patient's sternum. A system of infra-red beams and cameras produce the respiratory cycle information that is integrated with PET/CT image data sets. After the images are fused, the movement and deformation of the target is analyzed. The phase of breathing where the target is most stable and has the least deformity is chosen. The respiratory gating function is used to turn the beam on when the tumor is in the precise phase of the breathing cycle and turn the beam off when it is out of phase. This helps minimize the amount of lung and surrounding normal tissue that receives the radiation.

This also has advantages in treating tumors of the liver, pancreas and stomach because they too are affected by breathing motion of the diaphragm. IGRT can also be used in dynamic adaptive radiation therapy to account for inter-fraction variations to provide greater precision in dose delivery while minimizing dose to the surrounding normal tissues. This can become critical when delivering high doses of radiation to the head and neck, prostate and tumors along the spinal cord.

The new Varian 2100 IX with On-Board Imaging and cone beam CT image guided radiation therapy (IGRT) can provide more precise radiation delivery to the tumor while sparing the surrounding normal tissues with resulting better control due to dose escalation with fewer side effects and a better quality of life.

- Jon D. Frazier, MD

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## Doctor's, Be Blunt About Screenings, Please!

I have a strange job, tending to the psychological needs of our patients and their families. One thing it does do is afford me a clearer view on people's resistance to screenings, especially since I spend more time with the patients whose prognosis is most grim, and these tend to be the very people who postponed screenings until emerging symptoms revealed more extensive disease.

Of course the newer targeted therapies have changed my job with colorectal cancer patients even in the six years I've been here. Tumors can be controlled or even reduced to the point where a curative surgery is possible, and in most cases both length of life and quality of life are better maintained than ever before, but it's still a brutal ride.

Speaking with the patients, they often upbraid themselves for having skipped screenings. (Sometimes family members are angry at the patient for this, and putting them all through the emotional and financial meat grinder that is even the best treatment.) Sometimes, and good doctors you'll want to know this, the patients and families blame their PCP or internist for not insisting on a screening. Many patient's fears of screening are strong enough that a mere recommendation or common sense approach can't overcome it.

Statistics won't persuade this group, overrepresented by men and the un(der)insured. If it is fear and denial that keeps them at risk then fighting these squeamish fears with pictures of what they really need to be afraid of becomes the professional thing to do. Ask with eye contact, if they will, in fact, follow through with the screening. Ask them for their personal best reason to follow through. If they make a person-to-person agreement with you they'll know how important it is to you, and follow-through is enhanced. "Don't make me visit you in the hospital after your colostomy. Trade a slice for a snip and stay my patient for a good long while."

The patients I talk to who've had this kind of rapport and felt this level of caring persuasion from their doctors always say the nicest things about their doctors behind their backs. They sometimes, and rightly so, credit the doctor who persuaded them to get screened for saving their life as much as anything we do.

My primary care doctor is that kind - thank you! I turned 50 in January, had my prostate cancer screening, and I'm scheduled for my first colonoscopy next month. Even as well as we treat our patients here, I'd rather not be one!

- Andrew Dixon-Reed, PhD



Andrew Dixon-Reed, Ph.D.

Formerly clinical coordinator of Mulberry Center's outpatient offices and clinical director of a doctoral residency in clinical psychology, Dr. Andrew Dixon-Reed joined the Evansville Cancer Center in 2001. One of the few board certified psychologists in the region (American Board of Professional Psychology), Dr. Dixon-Reed brings a blend of clinical expertise, compassion and common sense. Beyond this, for our patients whose view of complementary medicine looks to the East, Dr. Dixon-Reed coaches patients desiring it in T'ai Chi, Qi Gong and meditation.

## Your Guide to Cancer Screenings

		TEST	FREQUENCY
WOMEN	Breast Health	Self-exam Mammogram	Monthly 1 - 2 years starting at age 40*
	Cervical Health	Pap Test	1 - 3 years starting at age 21
	Ovary Health	CA-125 TVS-ultrasound	Only for high-risk women Only for high-risk women
MEN	Prostate Health	Digital Rectal Exam PSA Blood Test	Annually starting at age 50 unless family history or African-American, age 40*
	Testicular Exam	Self Exam Physical Exam	Monthly Part of complete exam by PCP
MEN AND WOMEN	Colon Health	Colonoscopy	Every 10 years starting at age 50*
	Skin Health	Mole Self-exam Physical Exam	Monthly starting at age 20 Annually starting at age 20 by PCP or dermatologist*
	Oral Health	Exam by Dentist or ENT Physician	1 - 2 times a year

\* NOTE: Guidelines for screenings vary. This is a compilation of generally accepted major screening recommendations from national health organizations and experts, but by no means is comprehensive or a substitute for a physician's advice. More frequent screenings are recommended for high-risk men and women per recommendations of their health-care provider.