Radiation Safety Department Newsletter

SUMMER WVU • WVUH • HSC 2015

SPECIAL POINTS OF INTEREST:

- Reducing dose
- INTRABEAM®
- D-SPECT
- PET/CT scanner

WELCOME

The WVU Radiation Safety Department, along with members of the Radiological Safety Committee and its sub-committees, are committed to the ongoing development and implementation of the current radiation safety program that includes WVU Campuses, Jefferson Medical Center, WVU hospitals Inc., Blanchette Rockefeller Neurosciences Institute, and Fairmont Regional Cancer Center. All research activities involving the use of radioactive materials, radiation producing devices, and the diagnostic and therapeutic use of radiation in humans, non-humans, and animals is overseen by the Radiation Safety Department and the committees. In managing this program, the Radiation Safety Department Staff will provide guidance and enforcement to guarantee a safe working environment for all individuals working with radioactive materials or devices located within these facilities.

DOSIMETERY REMINDER

All dosimeters are to be returned to the Radiation Safety Department within 30 days of the end of the quarter and/or month. Mirion charges $12.00 per badge and $5.00 per ring when they are unreturned or returned late. If you have any questions regarding dosimetry you can contact us at 304-293-3413.

INSIDE THIS ISSUE:

REDUCING DOSE

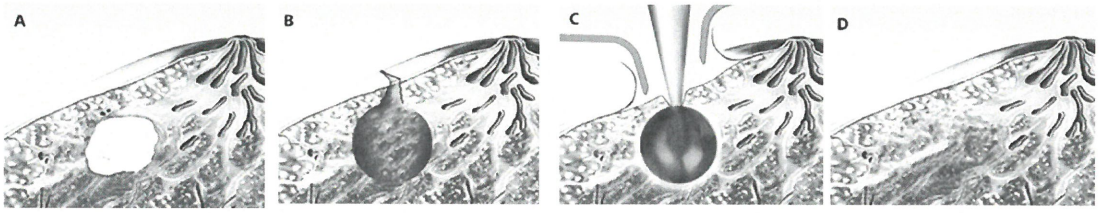
A computed tomography (CT) scan, also called a CAT scan, is an imaging test used to detect cancer and find out where it is located, if or where it has spread, and whether it is affecting other parts of the body. Physicians may also recommend having CT scans during and after cancer treatment to find out if the treatment is working or to look for signs that cancer has come back. Many people with cancer are worried about the safety of repeated CT scans because it uses a form of radiation. Like anything in life, including cancer treatment, there are risks and benefits. The Radiation Safety Department has received requests from physicians and individuals to assess cumulative dose from multiple CT Scans used to assess and study individual patient's risk. The Director and Radiation Safety Officer stated that, this study is in its inception Period and he is looking into it with cooperation of Medical Care Management. He also stated that "manufacturers of CT scanners have made great strides in reducing dose. Newer CT scanners have built in dose saving features designed to provide the lowest dose while preserving the image quality but patients and their physicians also need to be aware that there are risks and those risks add up over time."

NEW TECHNOLOGY

The trend in oncological therapy is moving towards the targeted, risk-adapted and interdisciplinary treatment of tumors. The Zeiss INTRABEAM® uses low-energy X-ray photons to target an area of interest while minimizing radiation exposure of healthy tissue. The increased ionization density of radiation in the tissue leads to the relatively high biological effectiveness of low-energy X-rays in the near range. At the same time, the periphery is protected through the steep physical depth dose gradient of this type of radiation. The internal radiation monitor (IRM) detects a part of the reflected X-rays and, after appropriate calibration, records the dose rate at all times. The result is displayed on the treatment monitor of the control unit and thus enables continuous monitoring throughout the treatment.

Breast Cancer Treatment with Targeted Intraoperative Radiotherapy

Targeted Intraoperative Radiation Therapy (IORT) with INTRABEAM is a risk-adapted individualized therapy that delivers low-energy X-rays directly into the tumor bed at the time of surgery (after tumor excision). During this procedure, the radiation is applied using a spherical applicator in a way that ensures direct contact with the target tissue. Radiation is delivered precisely to the area with the highest risk of tumor recurrence while minimizing radiation to healthy tissue.



A: Step 1 - The position of the tumor is determined.
B: Step 2 - The tumor is surgically removed.
C: Step 3 - The INTRABEAM applicator tip is positioned in the tumor cavity (for about 30 minutes).
D: Step 4 - The applicator is removed and the incision closed.

ALARA (as low as reasonably achievable) is a radiation safety principle for minimizing doses and releases of radioactive material by using all reasonable methods. In principle, no dose should be acceptable if it can be avoided or is without benefit. [See Title 10, Section 20.1003, of the *Code of Federal Regulations* (10 CFR 20.1003).]

NEW TECHNOLOGY

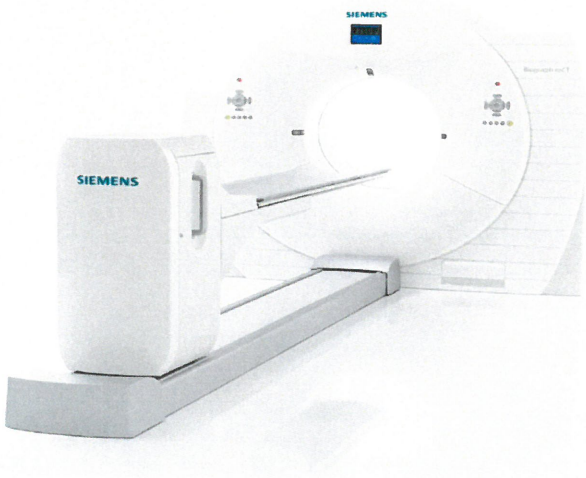
A new state-of-the-art nuclear imaging system called **D-SPECT** is helping doctors at the WVU Heart Institute detect and treat cardiovascular disease in a faster, safer and more comfortable manner for patients.

The D-SPECT™ Cardiac Imaging System can complete a SPECT study in only 2 minutes. This is a significant improvement over current technologies that require 12-20 minutes. This incredibly fast, high quality acquisition can be achieved through the optimized features of BroadView™ Technology in the D-SPECT™ Cardiac Imaging System.

- Larger radiation collection angles and a unique scan pattern provide 10x more efficient photon collection, leading to improved count statistics and higher quality images.
- Novel design of scanning solid state detectors and unique reconstruction of algorithms that improve resolution by up to a factor of 2.

In August, 2014 PET/CT acquired a new PET/CT scanner - Biograph mCT 20 Excel and surpluses the old Phillips PET/CT scanner, Gemini TF16. The new scanner has more benefits, both clinically and with regards to work flow. It can accommodate virtually all large patients. The scanner minimizes CT radiation exposure with unique dose shield and Care Dose technology. It also maintains workflow by preventing unplanned downtime, unlike the old Phillips scanner. Some of the Clinical benefits are:

- Highest-quality PET resolution with fast reconstruction times
- Low-dose CT imaging--especially for pediatric patients
- Industry-leading PET resolution for visualization of small tumors



A CT scan uses multiple x-rays to give doctors a three dimensional image that they can use to diagnose patients.

Radiation Safety Department

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NEWEST RSD EMPLOYEE AT WVU

The RSD would like to welcome our newest Environmental, Health, and Safety Specialist, Autumn Crum. Autumn earned her M.S. in Safety Management and her B.S. in Environmental Protection, both from West Virginia University. Formerly, she was the Health and Safety Specialist at NASA Headquarters located in Washington D.C. where she helped develop their Health and Safety programs.

When she isn't at work she enjoys reading, traveling, running, and playing softball. She is also an enthusiastic WVU fan, regularly attending football, basketball, baseball, and soccer games. She currently resides in Morgantown with her husband Nathan, their daughter Olivia, and their dog Sidney.

She can be contacted at adesant2@hsc.wvu.edu or via phone at 304-293-1548.
We wish her the best of luck in her career as part of the WVU RSD team!

Welcome and best wishes Autumn Crum!

In case of an emergency, or if you need to contact RSD after regular business hours, Radiation Safety can be contacted 24 hours a day, 7 days a week by using our on call pager number : *(304) 987-1586*

Please provide your full, 7-digit phone number when paging.

For more information visit our website or email at:

http://www.hsc.wvu.edu/rsafety/

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