Summer 2012

The Beam MSRT

MISSISSIPPI SOCIETY OF RADIOLOGIC TECHNOLOGISTS

AFFILIATED WITH THE AMERICAN SOCIETY OF RADIOLGOIC TECHNOLOGISTS

Inside this issue:

Letter from the MSRT President:

Hello to My MSRT Family,

I want to start off by saying CONGRATULATIONS to the recent graduates of all the radiologic technology programs from around the state! I'm sure it is a great relief for you to not worry about those dreaded check offs any more! You have conquered a major milestone in your career and you should be very proud of yourselves. Our Board of Directors, as well as the dedicated members of the MSRT, are working diligently to ensure that our profession meets the mark with the professionalism and expertise that it is designed to have. With the recent introduction of the CARE bill into the senate, and the hopeful passing of it, we are well on our way of accomplishing what so many across this great state and country have been working so hard for. The CARE bill, which stands for Consistency, Accuracy, Responsibility, and Excellence in Medical Imaging, will guarantee that the individuals who perform medical imaging are well educated, certified, and have put the time and effort in as each of you have. Are you certain when you or your family member go to a clinic that the radiation procedure is administered by a registered technologist? Well this bill will leave no question about that.

The board members of the MSRT are continuously and aggressively working on ways to improve and embark upon new ideas which will prove beneficial to each of its members, especially our students. Our main goal is to ensure that we have a strong and vigorous organization to keep each of you involved and we highly invite your ideas and recommendations on how to make the organization more beneficial.

Please continue to visit and utilize the amazing features that our website has to offer at www.msrt.biz. The website is updated very frequently with newer and more efficient ways to serve us. With the persistence and care of Mike Ketchum and Kristi Moore, who have worked tirelessly, we are now able to pay annual dues right there on the website!! Also check the website often for upcoming events like the 71st Annual Conference that will be held in Vicksburg on October 24th and 25th, and the past and current issues of THE BEAM. It has been a great pleasure and learning experience serving as the MSRT President this year and I look forward to seeing all of you at this year's conference!!

John Melvin BSRT (R)
MSRT President

NOTICE OF DUES INCREASE AND PROPOSED CHANGE TO M.S.R.T. BYLAWS

TO THE MEMBERSHIP OF THE M.S.R.T.:

The following dues increase has been established by the Board of Directors. This will require adoption by a majority vote of the voting membership in attendance at the annual meeting in October 2012.

Active members	-	$30.00
Associate members	-	$35.00
Student members	-	$10.00

If adopted, this will take effect for membership dues in 2013.

Bylaw Change

The following proposed bylaw change will require adoption by a majority vote of the voting membership in attendance at the annual meeting in October 2012.

Current Bylaw reads: Article III: Membership Section 4: Dues

C. Dues shall be paid within the thirty (30) days of renewal date. The renewal date shall be July 1. If dues are not paid by the expiration date, member rights, privileges, and obligation shall be discontinued.

The proposed change reads:

C. Dues shall be paid within thirty (30) days of renewal date. The renewal date shall be one year from the member's join date. If dues are not paid by the expiration date, member rights, privileges, and obligation shall be discontinued.

Submitted by: MSRT Bylaws Chairman, Diane Mayo, R.T.(R)(CT) - dmayort@yahoo.com

R.T. in D.C.

Mississippi (and the MSRT) had a wonderful representation in number this year at R.T. in D.C. Those of us who were able to attend this event in Washington, D.C. to lobby for the CARE Bill included me, Diane Mayo, Robbie Nettles, John Melvin, Kate Garner, and Rasul Azeez.

The ASRT began this event on Sunday evening with a welcome reception. Technologists from across the United States join together for this event, so the reception serves as a "meet and greet" opportunity for everyone.

We spent the entire day Monday learning about the CARE Bill's history, its importance, and how to lobby. The CARE Bill was first introduced in 2000 to the 106th Congress. "CARE" is an acronym that stands for *Consistency, Accuracy, Responsibility, and Excellence in Medical Imaging and Radiation Therapy*. It is important to us as technologists because it will set minimum standards in regards to education and certification for those who perform radiation therapy treatments and medical imaging examinations, such as routine x-ray, CT, MRI, Nuclear Medicine, and Ultrasound. These standards will have to be met in order to receive Medicare payment.

We learned that you must emphasize the most important aspects while lobbying so the limited time frame with the representative or health legislative assistant will be as effective as possible. The key points of the CARE Bill that we emphasized in our meetings included:

- *Reduced Health Care Costs*: The CARE Bill can save the Medicare program millions of dollars because the educational and credentialing standards will result in less repeat examinations, fewer delays in the treatment of patients, and a more accurate diagnosis because of higher quality images.
- *Maximized Patient Safety:* The educational and credentialing standards identified in the CARE Bill will ensure that imaging personnel have the knowledge of obtaining quality images while keeping radiation exposure to the patient as minimum as possible.
- *Increased Image Quality:* By enforcing these minimum educational and credentialing standards, imaging personnel will be competent with the most up-to-date technology and methods of improving image quality.

We spent Tuesday on Capitol Hill lobbying for the CARE Bill. We had appointments with staff of the four House Representatives and two Senators. Our main goal was to get the Representatives to sign-on since the CARE Bill is currently in the House. We already had the support of Gregg Harper, so we needed to gain the support of Alan Nunnelee, Bennie Thompson, and Steven Palazzo from the House. We were able to meet with Gregg Harper in his office. He was wonderful...very supportive of our profession. We were not able to meet directly with the other congressmen, but were able to see Palazzo and Nunnelee in passing.

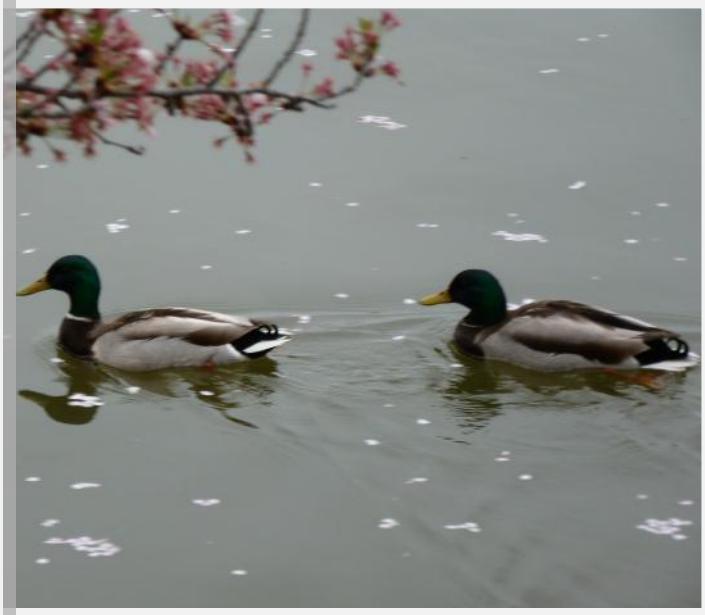
We met with the health LA for Senator Thad Cochran, and were fortunate to meet directly with Senator Roger Wicker. Even though the CARE Bill is currently in the House, it was important that we met with the Senators as well. Senator Wicker has always supported us in the past, and assured us that he will be a co-sponsor as soon as a number is assigned to the Senate version of the CARE Bill.

Of the six of us who attended R.T. in D.C., Diane Mayo was the only one who had ever been before. It was wonderful having a mentor for our first visit to Capitol Hill! It was apparent that Diane had a good rapport with all of the health legislative assistants...each of them knew who she was as soon as they saw her. Diane has also been extremely involved with following up with the congressmen or their health LA since our visit. We found out recently that Bennie Thompson has also signed on to the CARE Bill. Please give Diane Mayo a pat on the back the next time you see her...her dedication to this profession is unbelievable!

Kristi Moore, MS, RT (R)(CT)
MSRT Secretary, Editor of the BEAM, and Acting Executive Secretary

Pictured above (L-R): Robbie Nettles, Kristi Moore, Kate Garner, Rasul Azeez, Diane Mayo, John Melvin

Martin Luther King, Jr. Memorial



Pictured below (L-R):
ASRT President Dawn McNeil with Diane Mayo

CARE BILL UPDATE

Great things have been happening in the past few months with the CARE bill. We are not there yet and your help is still needed to help get it passed through Congress this year.

The CARE bill, H.R. 2104 (house version) was introduced June 2011 by Rep. Ed Whitfield, R-KY. As of today, 7/6/12, it has 129 bipartisan cosponsors. In MS, Representatives Harper and Thompson are signed on. If you live in Districts 1 and 4 your help is really needed. We met with staff in both of these offices in March during RT in DC, but since none of us are constituents we are having a hard time getting them to respond to our request for signing on as a cosponsor.

If you live in District 1, please contact Meyer Seligman at 202 225-4306 or Meyer.Seligman@mail.house.gov. Let her know you are an R.T. and support H.R. 2104 and need Rep. Nunnelee to be a cosponsor.

If you live in District 4, please contact Brett Richards at 202 225-5772 or brett.richards@mail.house.gov. Let him know you are an R.T. and support H.R. 2104 and need Rep. Palazzo to be a cosponsor.

For both of these be sure you leave your address and phone number in case they want to contact you. Just keep it short and simple if you like. They need to hear from their constituents!

The ASRT hosted a Capital Hill briefing on May 17 to educate lawmakers and their staff about the role of the diagnostic imaging team and the Consistency, Accuracy, Responsibility and Excellence (CARE) in Medical Imaging and Radiation Therapy bill, H.R. 2104. Speakers also from the American College of Radiology, Medical Imaging & Technology Alliance, and the Society of Nuclear Medicine joined the ASRT in explaining our roles and explained how the bill will help improve the quality of diagnostic images, resulting in better patient care and reduced Medicare costs.

On June 8, 2012, a congressional hearing on H.R. 2104 was held by the House Energy and Commerce Committee's Subcommittee on Health to discuss the scope of the CARE bill. The bill is supported by 35 health care organizations and will set federal education and certification standards in the Medicare program for the technical personnel providing, planning and delivering medical imaging and radiation therapy procedures.

Sal Martino, Ed.D, R.T.(R) FASRT, CAE, the ASRT CEO, provided testimony on behalf of the ASRT membership and all of the profession. Read a transcript of Dr. Martino's testimony or watch a recording of the hearing at the Energy and Commerce Committee's website.

The Senate has been waiting for things to get going on the house side and, now that it has, they introduced the Senate version of the CARE bill, S. 3338 on June 26, 2012. It was sponsored by Senators Mike Enzi, R-Wyo and Tom Harkin, D-Iowa and Roger Wicker, R-MS, who were original cosponsors.

Things are looking good for passage of this bill during the lame duck session, but our work is not complete in Mississippi.

CARE BILL UPDATE

Everyone needs to contact Senator Cochran's office and ask him to be a cosponsor (has many times in the past). Contact Elyse Marcellino at 202 224-5054 or elyse.marcellino@cochran.senate.gov asking her to sign her boss on to S.3338.

District 1 needs to contact Meyer.
District 4 needs to contact Brett.

You can follow the bills through www.thomas.loc.gov to see who the cosponsors are.

If you need more information check out www.asrt.org or feel free to contact me.

Since the MSRT now has this great website up and running, I will try and post updates as they occur on the bill, so check the website often.

Working together we can get this done.

Sincerely submitted,

Diane Mayo, R.T.(R)(CT)
ASRT RT Advocacy Committee, member

Pictured left: ASRT President Dawn McNeil speaks to congressional staff about the CARE bill and the role of radiologic technologists on the diagnostic imaging team

Picture and caption obtained from www.asrt.org

ASRT Affiliate Delegates' Report to the Membership

The ASRT Annual Governance and Delegates meeting was held June 29 –July 1, 2012 in Las Vegas, Nevada. Kristi Moore and I were honored to serve as the Mississippi Affiliate Delegates and represent the technologists of this state at that meeting. We attended all mandatory meetings and both the radiography and education chapter meetings. I am happy to say that this was one of the smoothest and most efficient meetings of the House of Delegates that I have ever witnessed. There were no proposed changes to the ASRT bylaws and the main motions were mostly dealing with allowing some position statements to sunset as they were found within the practice standards or being addressed in advisory opinion statements. It was explained to the House that advisory opinion statements are used to clarify the practice standards. They are much stronger than position statements because the opinion is backed up with documentation supporting it. The only other motion that did not fall into this category was a late motion that sought to amend the ASRT position statement on campaign guidelines. This motion was passed and will now allow candidates for the ASRT offices and chapter delegates to use the communities page on the ASRT website for campaign purposes. Before this amendment, chapter delegate candidates were restricted to a brief position statement which limited the candidates' ability to connect with the voters. The hope is that more members will become involved and participate in the elections. Near the end of the session Sandra Hayden was elected to once again serve as speaker of house and a new vice-speaker was elected. Amanda Garlock Corbin will serve in that position for the upcoming year. Young and enthusiastic, Amanda should do a great job in her new role.

Both Kristi and I would like to thank the members of the MSRT in entrusting us to represent our great state at the House of Delegates meeting. We hope we served you well. On a personal note, I would like to thank you for the opportunity to sit as your delegate for the past 4 years. It has been informative, educational, tedious, fun, exhausting, exhilarating – but my time is now up. Someone else will step up to the plate and assume this responsibility. I encourage all members to become involved with the MSRT. We would love to have fresh faces and fresh ideas. Who knows? You could very well be the next one to represent us at the 2013 House of Delegates meeting.

Thanks again for all your support. You can find more information on the ASRT website or if you have specific questions please don't hesitate to send either Kristi or me an e-mail. We are here to serve you.

Respectfully Submitted,
Mike Ketchum
Mississippi Affiliate Delegate

Mississippi Affiliate Delegates:
Kristi Moore and Mike Ketchum

Pictured Left: Lee Brown represented Mississippi as one of 61 students who were selected across the USA for the student leadership program at the ASRT House of Delegates meeting

Front row (L-R): Paula Young, Mike Ketchum, Suzanne Fisher, Sherrill Wilson, Kristi Moore
Back row (L-R): Diane Mayo, Christy Thomas, Lee Brown, John Melvin

Fremont Street

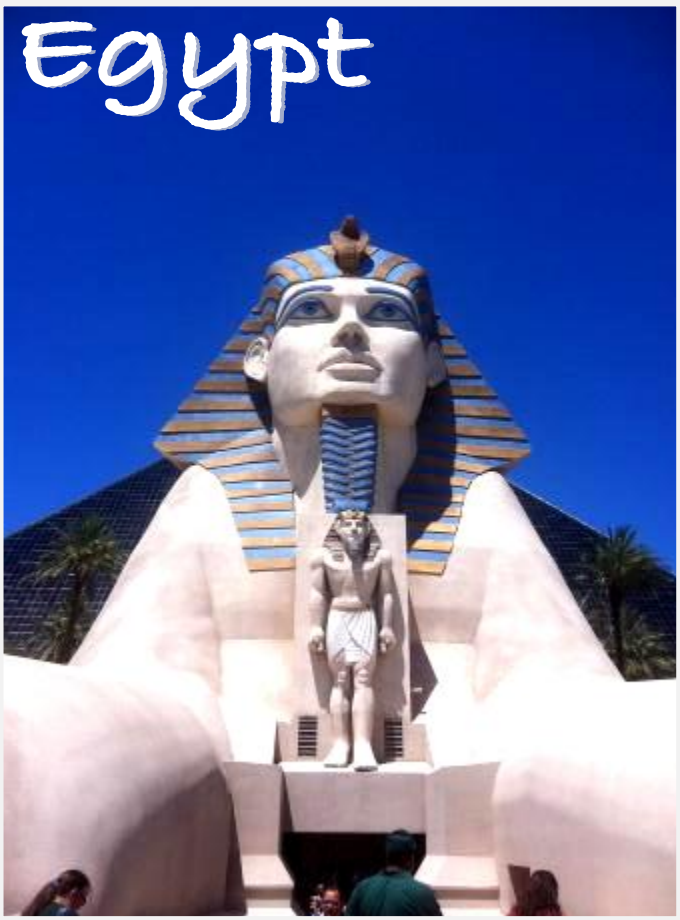
Pictured Left: "Heart Attack Grill" on Freemont Street...they have a quadruple bypass burger!

Pictured below: The Stratosphere...the rides at the top are awesome!

Stratosphere

Vegas Art

Pictured Left: This "Vegas art" is a collection of intermingled canoes...it was very cool!



Las Vegas is like a world of its own! Paris...Egypt...

Every hotel has unique beauty. Pictured to the left are blown glass flowers affixed to the ceiling of the Bellagio hotel...magnificent!

New York...Italy...

Pictured Above: Inside the Conservatory at the Bellagio

...Bellagio!


A world of its own!


WELCOME
to Fabulous
LAS VEGAS
NEVADA


DRIVE
CAREFULLY
Come Back
SOON

Congratulations Graduates Class of 2012

Copiah Lincoln Community College

Front (L-R): Jamey Stuckey, Kyle Holzhalb

Middle (L-R): Ashley Reid, Chelsi Smith, Traci Jenkins, Courtney McNeese, Olivia Geter, Catherine Strader, Leighann Frasier, Beth Floyd

Back (L-R): Heather Perry, Nneka Jenkins, Dana Gaudet, Emmaline Murphy, Kelci Ellison, Leila Jackson, Chelsey Edwards, Aimee Smith

Hinds Community College

Front (L-R): Latrisha Humphries, Kali Key, Bethany Taylor, Pennie Clack, Brittany Freeman, Lindsley Butchart, Chris Nevels, Trisha Fortenberry

Back (L-R): Patricia Opdyke, Renee Pickell, Ashley Hibbard, Keisha Lyles, Brittany Wycoff, Erin Slay, Courtney Landers, Coley Bush, Calandria Mosby, Marquise Gladney

Itawamba Community College

Front (L-R): Allyson Malone, Sara Brooks, Brittany Carpenter, Lindsey Bouchillon, Whitney Brown, Lindsay Eaton

Back (L-R): Austin Burns, Derek Smith, Jason Klow, Robin Nanney, Jessica Taylor, Pearl Pippins, Arlana McKinney, Andrea Ringman, Brandon Wilburn, Erika Malone

Jones County Junior College

Sitting/Kneeling (L-R): Alisha McCurley, Tyler Taormina, Katie Fell, Jourdan Mills, Anna Patterson, Chad Donald

Standing (L-R): Abby Wickham, Elisha Ray, Candace Leach, Brittany McCann, Sarah Wade, Katelyn Flowers, Whitney Smith

Meridian Community College

Front (L-R): Deondra White, Cristina Mumme

Back (L-R): Megan Lewis, Kelly Jonas, Ashton Welch, Ashley White

MS Gulf Coast Community College

Front (L-R): Alex Vesa, Sofia David, Lynne Harris, LaTonya Benjamin, Brittany Guidry, Lauren Cross, Jenna Rose

Back (L-R): Taylor Emile, Mariah Gibson, Amanda Tuggle, Kelly Ly, Duy Tran, Megan Finley, Ellen Reese, Elizabeth Porter, Emily Warren, Jessica Turner

Mississippi Delta Community College

Front (L-R): Kyerica Nolden, Krystal Wise, Nadia Gilmore, Christian Weeks, Ryan McIntyre

Back (L-R): Melissa Keithley, Dustin Rowe, Kelly Stokes, Melonie Beckham, April Winters

Northeast Mississippi Community College

Front (L-R): Anna Zickos, Brittany Singleton, Laura Burcham

Back (L-R): Ethan Prince, Michael Harris, Nathan Miller, Nina Thorn, Kimberly Wilbanks, Scott Tucker, Heather Johnson, Anna Kate Moyers

Pearl River Community College

Front (L-R): Rishawn Haynes, Allison Viator

2nd (L-R): Catherine Lambert, Tara Smith, Myka Trahan

3rd (L-R): Lesli Burnham, Laken Taormina, Samantha Grillo

4th (L-R): Rebecca Laubscher, Logan Holden, Kara Dyess

Back (L-R): Maggie Heithaus, Ashley Daw, Hannah Swan

University of MS Medical Center

Front (L-R): Mary Margaret Irons, Brooke Ball, Amanda Knight, Krystal Wallace
2nd (L-R): Becky Nelson, Abbey Graham, Anne Davis
3rd (L-R): Michelle Shannon, Kate Garner, Melanie Hargett, Leslie George
4th (L-R): Jeff Arnold, Cindy Ellis, Jamie Griffin, Magen Harris, Melissa Porter
5th (L-R): James Bender, Kahila Boyd, Lee Hunt, Rasul Azeez, Josh Pugh
Back (L-R): David Jeukens, Ryan Bostick, Nick Foster, Jon Dodson, Javier Calderon

MSRT Scholarship Recipients

Each of these students has demonstrated outstanding academic and clinical performance throughout their education. We salute them and wish them well in their future endeavors.

MSRT Board of Directors

Catherine Strader
Co-Lin Community College

Jason Klow
Itawamba Community College

Trisha Fortenberry
Hinds Community College

Abby Wickham
Jones County Junior College

Kelly Jonas
Meridian Community College

Rebecca Laubscher
Pearl River Community College

Dustin Rowe
MS Delta Community College

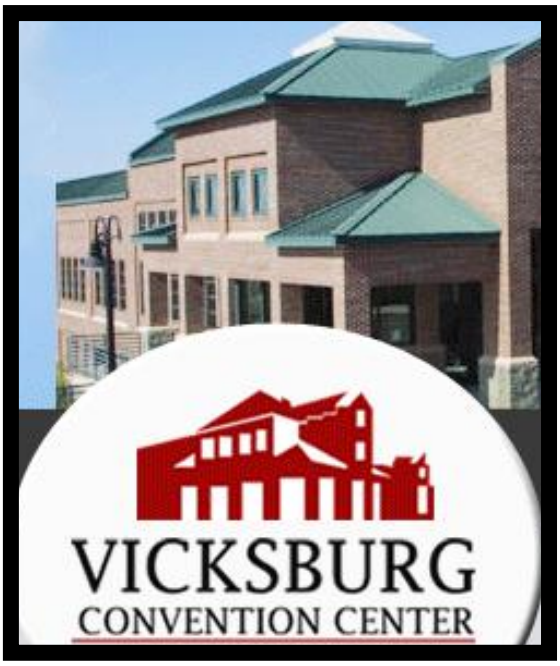
Kate Garner
University of MS Medical Center

MSRT 71st Annual Conference

October 23-25, 2012

Vicksburg Convention Center

Vicksburg, MS



Please continue to check the MSRT website (**www.msrt.biz**) for updated information about Conference.

Contact Information

Grand Station Hotel & Casino

1310 Mulberry Street

Vicksburg, MS 39180

Toll Free: 1-800-843-2343

Local: 601-636-3423

Email:

http://www.grandstationcasino.com/

MSRT 71st
Annual Conference
October 23-25, 2012

Conference Registration

We prefer you register for Conference online at **www.msrt.biz** when it is available; however, if you prefer to mail in your registration, there will be an avenue for that as well. Please check the website in early August for a finalized agenda and registration information.

MSRT 71st Annual Conference
Tentative Agenda

Wednesday, October 24, 2012

7:00 am – 8:00 am……Registration

8:00 am……Opening Ceremonies

8:15 am – 9:45 am……Student Manuscripts

9:45 am – 10:00 am……Break

10:00 am – 11:00 am……Andy Allen - "TBA"

11:00 am – 12:00 pm……Cathie Kukec - "TBA"

12:00 pm – 1:00 pm……Lunch and Student Meeting

1:00 pm – 2:00 pm……Dr. Andrew Smith - "TBA"

2:00 pm – 3:00 pm……Paul Crum - "Digitize your World"

3:00 pm – 3:15 pm……Break

3:15 pm – 4:15 pm…… Richard Fucillo - "Communicating with Alzheimer's Patients"

4:15 pm – 5:15 pm…… Dawn McNeil - "TBA"

7:00 pm – until……Student Prep Bowl

Thursday, October 25, 2012

7:00 am – 8:00 am……Registration

8:00 am – 9:00 am……Dawn McNeil - "TBA"

9:00 am – 10:00 am……Stefanie Dendy - "RA's Role in Rural Hospitals"

10:00 am – 10:15 am……Break

10:15 am – 11:15 am……Richard Fucillo - "Life as an R.T."

11:15 am – 1:00 pm……Lunch and Business Meeting

1:00 pm – 2:00 pm……Cathie Kukec - "TBA"

2:00 pm – 3:00 pm……Diane Mayo - "TBA"

3:00 pm – 3:15 pm……Break

3:15 pm – 4:15 pm……Debbie Shell - "Emergency Preparedness"

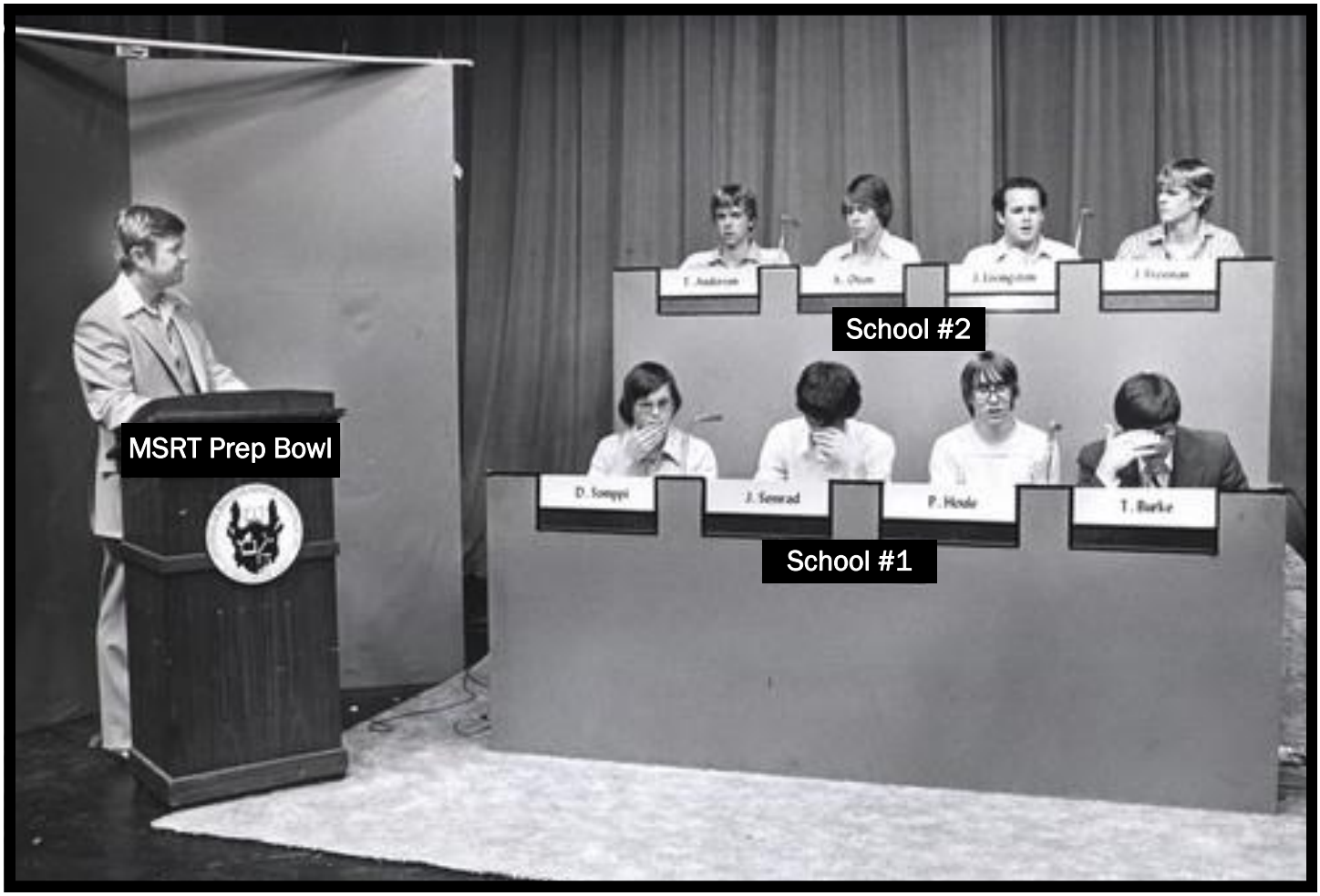
6:00 pm……Awards Banquet and Installation of Officers

8:00 pm……Halloween Costume Party

Student Prep Bowl

Where: Vicksburg Convention Center
When: Wednesday, October 24, 2012 from 7:00 pm until...

Please see the rules beginning on the next page



MSRT Central District Prep Bowl

Rules and Regulations

Purpose:

To review and increase knowledge of radiologic technology among students who should be preparing themselves for the ARRT Registry. This will be an excellent form of registry review.

Eligibility:

Participants in the MSRT Central District Prep Bowl must be enrolled in a JRCERT approved radiologic technology program. Each member of a team shall be in the final year of the program and all team members shall be from the same program. The students participating in the prep bowl must be a member of their state affiliate and registered for Conference in order to participate.

Team Roster:

Each school will be represented by only one (1) team. Each team will be represented by no more than five (5) senior level students from the same approved program of Radiologic Technology. Only three (3) team members may serve on the panel at any one time. Students will be allowed to rotate members during scheduled breaks only.

Officials:

Each official shall be a registered radiologic technologist or a radiologist. No faculty member or clinical instructor of a participating school shall serve as an official unless approved by the MSRT Central District.

- **The Moderator:** Shall serve as competition coordinator. It shall be the duty of the moderator to present all questions, repeat each answer, and call official breaks or time-out. The moderator must read the question only and may not elaborate in any way which might aid in the answering of the question.
- **The Panel of Judges:** Shall be available to verify all challenged questions using text references. The decision of the judges is final. If the question cannot be verified, the question will be thrown out and a new question asked.
- **The Timekeeper:** Shall keep the official response time during competition.
- **The Scorekeeper and Backup Scorekeeper:** Shall maintain a comprehensive score record of the schools in competition. The scorekeeper will keep score on a board visible to the audience, while the backup scorekeeper will keep score independently.

Competition:

Calculators, pencils, and scratch paper will be provided. Team members may only use the items provided. All schools will compete at the same time. Competition will consist of five (5) rounds of categorical questions according to the current ARRT Registry content. The rounds will proceed as follows:

Round	Category	No. of Questions
1	Radiation Protection	4
2	Equipment Operation and Maintenance	4
3	Image Production and Evaluation	4
4	Radiographic Procedures & Anatomy	4
5	Patient Care and Education	4
	Total	20

Time:

Each team will be allowed ten (10) seconds to answer each question. If the answer has not begun in ten (10) seconds or if the wrong answer is given, that question will be discarded.

Questions:

For the collection of questions, the Central District of the MSRT will seek participation from educators of the JRCERT approved radiologic technology programs in Mississippi. The Central District will verify accuracy of questions collected and will not reveal the questions to anyone outside the Prep Bowl committee. Questions will be multiple choice only. During competition, only one repeat per question will be allowed.

Points:

Each question will be worth one (1) point for a possible total of 20 points. In the event of a tie, the competition will go into a sudden death tie-breaker, where random questions will be asked alternately until a winner is declared.

Breaks:

A five (5) minute break will be placed between each round for team member rotation only. After Round Three (3), there will be a fifteen (15) minute recess for the audience and teams.

Challenge:

A question may only be challenged by a member of the three person team participating at that time. The question must be challenged prior to the reading of the next question. **The Judge's ruling is final.**

Penalties:

Any coaching or yelling of answers from the audience will disqualify the question from competition and a new question will be asked. Continued disruption will result in removal from the competition area.

Awards:

Plaques will be awarded to First, Second, and Third place teams. The First place team will also receive a $100 cash award from the Central District of the MSRT.

Additional Rules:

Alcoholic beverages are not allowed and persons with alcohol/alcoholic beverages in their possession shall be considered disruptive and removed from the competition area.

All electronic devices (i.e. cell phones, pagers, Bluetooth, etc.) must have the power turned off and stowed away during competition.

Halloween Costume Party

Where: Vicksburg Convention Center

When: Thursday, October 25, 2012
from 8 pm until midnight

Student Manuscript: 2nd Place Recipient — Nick Foster (UMMC)

Fibrodysplasia Ossificans Progressiva

Ever since humans have inhabited our Earth, many diseases have plagued the world we live in. Fortunately with our growing knowledge and constantly advancing technology, we have found cures to many of these diseases, but some cures still remain unknown. Scientists, doctors, and medical professionals around the world work hard every day to make a positive change, and hope that someday a person diagnosed with a certain disease will be able to carry on their life like they once did. The diagnosis of a serious illness to a human being can be a devastating and life altering experience, and even though we have come a long way working together, we are no where near the tip of the iceberg when it comes to our advances in medicine. Of the diseases that have been discovered through our vast research throughout the thousands of years, some stand alone in their own unique way with how they affect and control one's body. With that being said, fibrodysplasia ossificans progressiva is one of these diseases that stand in a category of its own. It is a relatively new discovered disorder, and there is much to learn to help the very small percent around the world who become diagnosed with this destructive illness.

The history of fibrodysplasia ossificans progressiva, a disabling autosomal dominant disorder, can be inherent but usually affects those who have no history of the condition in their family. It is recognized as recurrent, painful soft tissue swelling, sometimes accompanied with fever. The tissue swelling appears as subcutaneous tumors, which can sometimes lead to misdiagnosis. Histological examination shows slight dermal fibrosis and "a pronounced proliferation of fibroblasts within the muscles in several areas, leading to destruction of muscle fibers. Predominate mononuclear cell infiltrates are present within the muscles and in the subcutaneous connective tissue, with extensive proliferation of connective tissue fibroblasts replacing damaged muscle fibers, plus areas of newly formed bone tissue" (Schwartz et al., 2010). The earliest reports of this disease date back to the 17th and 18th centuries. In 1736 in particular, a British physicist by the name John Freke was involved with an adolescent who had severe swellings throughout his back. He then wrote of the condition extensively which lead to the discovery of the disease. The disease at this time became known as

myositis ossificans progressiva, which basically means "muscle turns progressively to bone." Much later in the 1970s, Dr. Victor McKusick of Johns Hopkins University School of Medicine officially termed the disease as fibrodysplasia ossificans progressiva due to the fact that other soft (fibrous) tissues plus muscle are replaced by bone.

In order to fully understand the magnitude of fibrodysplasia ossificans progressiva, one must know the facts that this powerful disease renders to those who are diagnosed with the disorder. Fibrodysplasia ossificans progressiva is without a doubt one of the most disabling, rarest genetic conditions ever to be discovered in medicine today because no other existing diseases involve one normal organ system forming into another. This condition involves bones forming in tendons, ligaments, muscles, and other connective tissues. Along with this, developing across joints are links of extra bone that advance to inhibit movement and form a second skeleton that imprisons the body in bone. The extra bone that is formed is normal in every way, but it just should not be present in that particular spot. The typical progression of fibrodysplasia ossificans progressiva involves spontaneous flare-ups, which may last as long as 6-8 weeks, arising in particular spatial and temporal patterns. "Flare-ups may also be caused by viral illnesses such as influenza" (Genetics Home Reference, 2007). This results in sheets, or ribbons, of bone fusing joints of the appendicular and axial skeleton together, which in turn entombs the victim in a skeleton of heterotopic bone. The course of this disease generally starts with the head and shoulders, and further progresses down the body and into the limbs.

Fibrodysplasia ossificans progressiva is a congenital condition, but the extra bone formation does not occur before birth. Generally, the disease becomes evident in early childhood, and a majority of people with the disorder are diagnosed officially as having fibrodysplasia ossificans progressive before the age of ten. The condition is not the same from person to person in regards to the progression of new bone formation, and the unpredictable symptoms are rapid for some, while others may experience a more gradual progression. However, it is very common among most that the extra bone forms first in the shoulders, neck, and upper back in early childhood, while the hips and knees tend to progress during adolescence or early adulthood. With this being said, this condition only worsens, or progresses, as a person ages, and eventually the victim encounters a

total loss of mobility. Other characteristics involved with the disease as it progresses includes the inability to fully open the mouth, malnutrition due to eating problems because of the immobilized facial bones, and difficulty breathing as a result of extra bones forming around the ribs restricting lung expansion. Myositis may also be triggered by sudden falls or certain medical procedures, which causes more rapid ossification of the bones in the injured area. Research thus far on this particular condition has answered many questions, and very well could "have far reaching implications for the treatment of common disorders such as fractures, osteoporosis, hip replacement surgery, and other forms of heterotopic ossification that occur in trauma and burn victims" (IFOPA, 2009).

When dealing and learning about fibrodysplasia ossificans progressiva, researchers of the disorder have always had the main goal of cause and cure for the disease. "The mechanism by which bone forms out of muscles, tendons, and ligaments is still poorly understood, but bone morphogenetic proteins (BMP), and particularly BMP4, are likely to play a direct or indirect role" (Urtizberea, 2003). After 15 years of rigorous research, in 2006 a research team from the University of Pennsylvania School of Medicine was able to pinpoint a particular gene mutation that is responsible for the bone growth of the disorder. This disorder involves mutations in the ACVR1 (Activin Receptor Type IA) gene, one of three known members of the protein family called BMP type I receptors, specifically. The ACVR1 protein is located in many bodily tissues, including cartilage and skeletal muscle, and is 509 amino acids long. This specific protein aids in controlling bone and muscle growth, and commonly ossification factors that occur in a normal skeletal maturation. "As is the case for most genes, every cell has two copies of the ACVR1 gene. In fibrodysplasia ossificans progressiva patients, one of the two ACVR1 gene copies harbor a mutation that causes the ACVR1 protein to be incorrectly made" (Kaplan, 2006). Every patient with this certain disorder tends to have an identical mutation of the ACVR1 gene.

The symptoms of fibrodysplasia ossificans progressiva are generally misdiagnosed with other medical conditions, but in early childhood become evident as a person's skeletal features begin to become abnormal. Children with the disease appear normal at birth, except for the most unique characteristic of the disorder,

which can be a telltale sign. This unique characteristic involves a hallus valgus formation, with microdactyly, of the big toes, which is present at birth. The patient's big toes are malformed in that they are bent, short, or sometimes even curved inward. With this condition of the malformed big toes being present at birth, this aids in being an important early warning sign of fibrodysplasia ossificans progressiva before the disease actually begins with the onset of extra bone, and can also help to distinguish this certain condition from other various muscle or bone problems. Further more, "the progressive course of fibrodysplasia ossificans progressiva with variable periods of the disease quiescence leads to several complications, including torticollis (involvement of sternocleidomastoid muscles), with contractures of muscles and deformity of the neck and thorax, scoliosis and joint immobilization due to periarticular ossification" (Blaszczyk, Majewski, Brzezinska-Wcislo, and Jablonska, 2003). As mentioned, fibrodysplasia ossificans progressiva can often times be misdiagnosed with other medical conditions, but gaining knowledge of this disorder can aid in the prognosis and diagnosis, and even prevention, of other various disorders and deformities. At the same time, proper diagnosis of this disorder is very important due to the fact that people, and their families, with this disorder suffer a great deal of pain throughout their lifetime. Also, it is important that physicians and healthcare workers around the world become better educated on this disorder so that misdiagnosis will not occur as frequently in the future. Since fibrodysplasia ossificans progressiva is one of the rarest disorders known, certain studies have shown that misdiagnosis of this condition is in the range of 80% or greater. Some of the reported misdiagnoses of this disorder include fibrous dysplasia, aggressive juvenile fibromatosis, cancer, osteosarcoma, McCune-Albright's disease, progressive osseous heteroplasia (POH), scleredema Buschke, and any other congenital or localized muscle and cutaneous ossifications. It is important to note that of these differential diagnoses, aggressive juvenile fibromatosis and osteosarcoma should be considered carefully because these two disorders may lead to chemotherapy, or even an unnecessary amputation of a limb. For future prognosis of fibrodysplasia ossificans progressiva, we should first look to the malformed big toes in the assumption of it leading to the disorder.

Since fibrodysplasia ossificans progressiva is such a rare disease, it is estimated that it affects amately 1 in 2 million people worldwide. There are an estimated 700 confirmed cases across the globe, and

approximately 1 in 2 million people worldwide. There are an estimated 700 confirmed cases across the globe, and only 185 known cases in the United States. Even though there are no racial, ethnic, or religious patterns when it comes to having the disorder, it is known that fibrodysplasia ossificans progressiva mainly occurs in whites, and is more common in females than males. The prognosis of the disorder is fairly poor due to thoracic muscle involvement and restrictive lung disease; most patients with the disease are bedridden by the age of 30 (due to ankylosis of the hip), and commonly die before they are 40 years of age. Unfortunately, there are no effective treatments in helping to aid the disorder, and because fibrodysplasia ossificans progressiva is accelerated by trauma, most medical procedures will only make the condition worse. The only preventative measures to aid the disorder is to control and try to decrease the amount and intensity of flare-ups. A large variety of medications have been tried in the treatment of this particular disorder, but most of them yielded no success. Biphosphonates and corticosteroids are mainly the only two treatments with beneficial success, but only aid during the time of flare-ups.

Radiological implications to fibrodysplasia ossificans progressiva include the hallus valgus deformity as a unique characteristic to proper diagnosis of the disorder. Computed Tomography (CT) scans are sometimes used in helping to diagnosis this disorder as they can reveal pieces of cracked bone, but are generally not an effective procedure for this condition. Other procedures used in trying to diagnosis this mysterious disease may include densitometry tests and x-ray examinations, as these certain procedures are effective in noticing heterotopic bone formation within fibrous tissue, but still yield no real help in treatment of the disorder. "Computed tomography is the best method for detection of early fibrodysplasia ossificans progressiva lesions. Bone scintigraphy shows an increased uptake of radio-labeled diphosphonate before ossification can be demonstrated by radiographic examination" (Schwartz et al., 2010). A biopsy is usually not recommended when it comes to fibrodysplasia ossificans progressiva due to the constant development of the subcutaneous tumors in a specific traumatized area.

In conclusion, only time will tell if preventative measures and treatment will ever get better for fibrodysplasia ossificans progressiva patients. Due to our constantly growing technology and knowledge of our

world, there is a chance that people with this disorder may one day be able to prolong their life. Fortunately for victims of this disease, it does not affect their cognitive abilities or intelligence, but may restrict their ability when it comes to academics and school. There are many questions that remain unanswered when it comes to this disorder, and finding these answers may lead to a cure for the disease, but mainly aid in various other medical conditions. As for people worldwide with the condition, it is important to note that the cause of the disorder is known and a gene discovery is in effect. Hopefully one day the future will hold the answer to unlocking the mysteries to this rare and bizarre disease.

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Student Manuscript: 3rd Place Recipient — David Jeukens (UMMC)

Positron Emission Tomography and Lung Cancer

Lung cancer is a deadly disease that affects many humans around the world. It usually starts in the lungs but can also start in other areas and lead to the lungs known as metastic cancer of the lungs (Zieve & Chen, 2010). It usually affects many people over the age of 45, but it can also happen in the younger generation as well. Positron Emission Tomography (PET) is a great way to detect the cancer in the early stages before it spreads. PET is an imaging source that uses metabolic energy to find the main areas of the cancer in the body. Treatment of lung cancer can be sought in the early stages with the patient having the general knowledge of the history of PET, how PET is used, history of lung cancer, and how to treat lung cancer utilizing the PET imaging system.

History of Positron Emission Tomography

In 1953, a young woman from Rhode Island was left unable to read from a neurological problem that she was having. She sought out a neurosurgeon in Boston to fix her reading problem. The surgeon's name was Dr. Gordon Brownwell, and a year later he successfully invented an imaging device that helped him locate the woman's tumor. He did surgery on the young lady and she eventually was able to read again. The imaging device Dr. Brownwell invented was the basis for the PET imaging system that is used today (Blue, 2010).

The actual inventor of PET scans was Dr. Michael Phelps, a medical examiner for UCLA in 1973. The scans at this time were introduced to the medical community, but the drawback was that the images were of low quality and definition. Also, they had to be checked by a chemist, physicist, and physician. A patient also had to go through Computed Tomography (CT) before the PET exam. This took a while for the scan to be ordered which prolonged the wait time for the patient. This also took away from valuable time the physician had to figure out the route of treatment because they had to wait on the image. During the 1980's the scans became a lot faster and also a lot more productive. It did not take as long to get the image and the scan produced a high-resolution image. The imaging system became automated around this time, which enabled a physician or a trained technologist to operate the machine (Blue, 2010).

In 2000, the new form of Positron Emission Tomography was born and installed in this was Computed Tomography, known as PET/CT. Dr. Ron Nutt and Dr. David Townsend invented this modality. This technology was more advanced than any PET machine on the market because it fused the images together (PET/CT, 2010). It allowed for the patient to be in one spot the whole time, which was very good because the physician was able to look at the image faster to figure out a treatment plan. The older model PET/CT scanners used a single slice spiral CT that also had a PET camera installed in the device, which utilized BGO Detectors. This was good for the technology at the time, but the workers wanted something faster to get more patients out in a hurry. In the next couple of years, a dual slice CT scanner that had the PET installed in it was born. The new edition to these PET scanners was that they utilized the new and much faster LSO Crystal. They have also made more advancement in this and use 16 row CT scanners, which utilizes the same LSO Crystals (PET/CT, 2010).

How PET is used

PET is a type of nuclear medicine that is usually performed in a hospital but can also be done in an outpatient center or a private practice. Both PET and PET/CT scans are good for detecting cancer; determining where the cancer has spread in the body; assessing the effectiveness of the treatment plan; determining whether the cancer has returned after treatment; determining blood flow to the heart muscle; determining effects of the heart such as a heart attack; and also evaluating brain abnormalities such as tumors (Positron, 2010). PET is different from regular x-rays, because in a regular x-ray, a patient is being examined from an outside energy source; whereas in PET, the energy comes from within the body. This energy that comes from within the body is usually gamma energy. This energy can be injected intravenously (IV), taken orally (swallowed), or inhaled as a gas. The patient then sits and waits very still and patiently for the radiotracer to be absorbed in the organ or tissue. The radiotracer is a type of radioactive nuclear medicine, and the radiotracer can vary from study to study. This process takes about 60 minutes and is the longest part in the study. The patient will then be moved into the PET/CT scanner where they will be laid on the table and sent through the tube. The patient is then CT scanned for a couple minutes before the PET scan starts and once the PET starts, it usually takes about

20 to 30 minutes depending on the study. On occasion, a second CT scan will be taken with an IV for contrast studies. The energy from the radiotracer is picked up by a gamma camera, which is then sent to a computer. Once viewed on the computer, a trained professional can tell how the organ or tissue is functioning. Another great thing about PET is that it can depict physiological processes within the body, such as rates of metabolism or levels of various other chemical activities, instead of just showing structure and anatomy (Positron, 2010).

History of Lung Cancer

Lung cancer, like most cancers, arises from abnormalities in the cell. Usually the body maintains a system of checks, especially for the cell. The body checks and balances cell growth so when cell numbers are down the body activates mitosis, which produces more cells. Disruption of this system of checks and balances in cell division will result in an uncontrolled proliferation of cells (Stoppler, 2011). This eventually forms a mass, which is also known as a tumor. Tumors can be either benign or malignant. Benign tumors usually grow out across the skin and can be removed without having to have cancer treatments, and they also do not spread to other parts of the body. Malignant tumors, on the other hand, are very aggressive and invade tissues of the body. Once they get in the tissue, they will invade the blood stream and the lymphatic system. This will allow passage of more tumors into the body (Stoppler, 2011).

There are two types of cells that cause lung cancer in the human body. The first is small cell lung cancer (SCLC), which makes up about 20 percent of all lung cancer cases. There are three different types of SCLC: small cell carcinoma (oat cell cancer), mixed small cell/large cell carcinoma, and combined small cell carcinoma. Most small cell lung cancers are the oat cell type. SCLC is the most aggressive form of cancer and usually starts in the breathing tubes (bronchi) in the center of the chest. These tumors often spread rapidly (metastasize) over parts of the body including the brain, bone, and liver. This type of cancer is more common in men than women and almost all causes of SCLC are due to smoking. Very rarely is SCLC diagnosed in patients who have not smoked (Zieve & Chen, 2010). The second is non-small cell lung cancer (NSCLC). It is the most common and usually grows slower and spreads slower than the other types of cancer. There are three forms of NSCLC. One form is adenocarcinomas and they are usually found outside the lung. The second

form is squamous cell carcinomas and they are usually found in the center of a lung by an air tube (bronchus). The third form is more dangerous than the previous two and is called large cell carcinomas. They can occur in any part of the lung and tend to grow faster and spread faster than the other two types. Smoking causes most cases of lung cancer. It usually depends on how many years the patient has been smoking and how many cigarettes were smoked a day (Zieve & Chen, 2010).

Treatment of Lung Cancer utilizing the PET Imaging System

When a patient comes into the doctor's office, the physician will ask them questions about their medical history. The doctor will ask if the patient smokes and also the patient will be checked with a stethoscope to check for fluid in the lungs, which can sometimes suggest cancer. The patient will then be put through an imaging system to see if the area of concern, in this case the lung, has cancer in it (Zieve & Chen, 2010). The best imaging system to use is PET. In the case of lung cancer, it is best to find out how big the tumor is and how deep in the body it has traveled, as well as which one of the five stages the cancer is in. Utilizing the PET/CT scanner, the best quality images are shown for the accuracy of staging. Previous studies have shown to benefit from these scans. If lung cancer has spread beyond the lung, surgery is usually not the first option. Studies have shown that PET scans have lowered the need for unnecessary lung cancer surgeries by 20 percent (Eldridge, 2008).

Conclusion of PET in Treatment of Lung Cancer

Positron Emission Tomography is equipment that has been used for almost 60 years but has become extremely popular within the last ten years. The technology now produces high quality images that are better for diagnosing cancer in its various stages. The use of glucose in the PET helps find the "hot spots" in the body and measures the size of the tumor. Malignant and benign tumors are the two types of cancers. Malignant is the life threatening one that needs to be treated. There are also two types of lung cancer. Lung cancer affects many people, but if they know the right steps to take and what to expect it helps the treatment process run smoother. PET/CT helps trained physicians to find the cancerous tumors in the patient's body and helps treat them quicker and get the patient well.

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Student Paper: Lee Brown (Jim Wood Award Candidate)

Exposure Technique Charts

Exposure technique charts are standardized kVp and mAs tables based upon patient part thickness. These charts are used to produce more consistent diagnostic x-ray images which will in turn decrease the need for repeat exams. This, of course, leads to a decrease in patient exposure. The use of technique charts also allows the radiographer the ability to more accurately predict the scale of contrast and optical density on fnished radiographs (Bushong, 2008).

Some basic rules need to be followed in order for the technique charts to be effective. First, there should be a separate chart created for each x-ray tube and portable machine that will be used. Each machine needs its own technique chart because no two tubes will produce exactly the same image using the same technical factors. Second, all x-ray tubes and portable machines need to be properly calibrated and maintained. Third, all images must be processed in a consistent manner, whether that be digital radiography or film-screen. Fourth, all optimal baseline kVp and mAs values should be determined with the use of a phantom model. Fifth, the chart should include pertinent information to the study being conducted. This should include the anatomic part, projection, measuring point, image receptor speed, SID (source-to-image receptor distance), grid ratio, focal spot size, and where the exam should be performed (for example; table bucky, wall bucky, tabletop, etc.)(Fauber, 2009).

There are four commonly used exposure technique charts found in radiology department. These include the variable kVp / fixed mAs chart, the fixed kVp / variable mAs chart, the high kVp chart, and the AEC (automatic exposure control) chart (Bushong, 2008). Each of these technique charts has its own advantages and disadvantages.

The first chart is the variable kVp / fixed mAs chart. Just as the name implies, the mAs will remain constant while the kVp is adjusted based on patient part thickness. For every 1cm change in part thickness, the kVp is adjusted by 2. Therefore, if the optimal baseline technical factors for a 10cm part are 8 mAs @ 70 kVp, then a part measuring 11cm would require techniques of 8 mAs @ 72 kVp (Fauber, 2009).

The variable kVp chart has several advantages. It is very effective with extremities and pediatric patients. This is a result of using lower kVp, because a lower kVp requires a smaller change to make a visible difference. Inversely, a large kVp requires a greater change to make a visible difference. Another advantage of the variable kVp chart is a shorter scale of contrast resulting from the lower kVp being used (Fauber, 2009).

As is often the case, advantages come with disadvantages and the variable kVp chart is no exception. This chart is less effective on larger part thicknesses. Also, because kVp fluctuates, it can lead to inadequate penetration of the part. Lower kVp requires higher mAs to maintain optical density which leads to increased patient dose and higher heat load on the x-ray tube (Fauber, 2009).

The second chart is the fixed kVp / variable mAs chart. This is the most commonly used exposure technique chart. It uses a fixed kVp with the mAs being adjusted to accommodate for differing part thicknesses. For every change in part thickness of 4-5cm, the mAs is adjusted by a factor of two. Using the previous example of a 10cm part with optimal techniques of 8 mAs @ 70 kVp, a part measuring 14cm would require the mAs to be increased by a factor of two. The technical factors would then be 16 mAs @ 70 kVp (Fauber, 2009).

The fixed kVp has numerous advantages. These include: a more consistent radiographic contrast and adequate part penetration because kVp is not being manipulated, part thickness does not affect chart accuracy, part measurement is not as critical because the chart uses 4-5cm increments, and it uses higher kVp which lessens patient dose (Fauber, 2009).

Though they are few, a fixed kVp chart does have disadvantages. High kVp creates a long-scale contrast which is not always diagnostic. This chart can also be more challenging to set up (Fauber, 2009).

The third chart is the high kVp chart, which is the least common of the four. It is set up like a fixed kVp / variable mAs chart; however, this chart generally uses kVp values in excess of 100 kVp (Bushong, 2008).

This type of technique chart is ideal for barium studies, thoracic exams, and any procedure requiring higher kVp. Radiographic contrast remains consistent because kVp does not change. The higher kVp may

also improve visualization of varying tissue densities (Bushong, 2008).

The disadvantage of the high kVp chart is the longer scale of contrast which is not always beneficial (Fauber, 2009).

The fourth commonly used exposure chart is the AEC chart. This chart would include the anatomic part being radiographed, the kVp to use, and which photocell to use. A computer linked with the x-ray tube will determine the mAs required for the procedure (Frank, 2012).

The advantages of an AEC chart are a more uniform radiographic contrast and optical density which lead to more consistent radiographs. This causes less repeated exams which results in lower patient dose (Bushong, 2009).

The major disadvantage of the AEC chart is the strict requirement of proper patient positioning. If the part to be radiographed is not properly placed over the correct photocells the image quality will be poor. This, of course, leads to repeated procedures which increase patient dose (Bushong, 2012).

In conclusion, exposure technique charts are an invaluable resource for a radiology department. They lead to consistently good diagnostic images which decreases the need for repeat exams. Less repeated exams result in less patient exposure (Fauber, 2009). Four common exposure technique charts are used to get these results. They are the variable kVp / fixed mAs chart, the fixed kVp / variable mAs chart, the high kVp chart, and the AEC chart (Bushong, 2009).

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It is time for nominations for the elected offices of the MSRT.

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Letter from the Editor:

I hope everyone has had a great summer so far! I am looking forward to Conference in October...I think Mike has made some great changes with the schedule to try to accommodate suggestions that have been made in the past. I want to encourage students to participate in the Prep Bowl. This is a great way to prepare for the Registry. I also want to encourage students to participate in the exhibit competition. Exhibit forms can be found on the website. Forms must be submitted to both the MSRT President and Conference Coordinator if you choose to compete. I hope you enjoyed this edition of The BEAM! The deadline for the next issue of The BEAM is tentatively set for November 10, 2012.

~Kristi Moore

See ya'll soon…
Conference 2012
(Vicksburg, MS)

Please be sure to check out the MSRT website in December for the next issue of The BEAM!!!

Kristi