

## RSNA 2012 B-roll

### Satellite Feed Coordinates

**Monday, November 26<sup>th</sup>, 2012**

**1:00 PM - 1:30 PM ET**

**Galaxy 17**

**Transponder 13 – Slot 1**

**KU-Band**

**Downlink Freq: 11945 Horizontal**

**Bandwidth 6 MHz**

**Symbol Rate: 3.9787**

**Data Rate: 5.5**

**FEC: 3/4**

**Tuesday, November 27<sup>th</sup>, 2012**

**1:00 PM - 1:15 PM ET**

**Galaxy 17**

**Transponder 13 – Slot 3**

**KU-Band**

**Downlink Freq: 11957 Horizontal**

**Bandwidth 6 MHz**

**Symbol Rate: 3.9787**

**Data Rate: 5.5**

**FEC: 3/4**

### Script

**Slate:**

RSNA 2012 logo

**Slate:**

This B-roll is provided by the Radiological Society of North America (RSNA) to illustrate press conferences presented Nov. 26 – 28 at the RSNA 2012 Scientific Assembly and Annual Meeting.

**Slate:**

Radiologists and allied professionals are gathering in Chicago this week for the 98<sup>th</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA), the world's premier scientific and educational forum in radiology.

**Slate:**

This B-roll contains five segments.

Stations are free to use these visuals according to the embargo dates and times for each segment. All times are Eastern Standard Time.

Preceding each segment is a written description of its content.

**Slate:**

To schedule interviews with study presenters or for additional information, call the RSNA Newsroom at 1-312-949-3233 from Nov. 24 – 29.

After Nov. 29, call Linda Brooks at 1-630-590-7762.

News releases and abstracts are posted at [www.rsna.org/press12](http://www.rsna.org/press12).

**Slate:**

Segment 1

**Imaging Shows Some Brains Compensate after Traumatic Injury**

Embargoed for release at 12:01 a.m. ET, Monday, Nov. 26

**Slate:**

Using a special magnetic resonance imaging (MRI) technique to image patients with mild traumatic brain injury (MTBI), researchers have identified a biomarker that may predict which patients will do well over the long term, according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA).

The results of the study showed that in some patients the brain may have changed to compensate for the damage caused by the injury.

“This finding has huge potential implications for preventing and repairing the damage that accompanies traumatic brain injury,” said Michael Lipton, M.D., Ph.D., associate director of the Gruss Magnetic Resonance Research Center at the Albert Einstein College of Medicine and medical director of MRI at the Montefiore Medical Center, Bronx, N.Y.

**Slate:**

According to the Centers for Disease Control and Prevention, each year in the U.S. 1.7 million people sustain traumatic brain injuries. MTBI, or concussion, accounts for at least 75 percent of all traumatic brain injuries. Following a concussion, some patients experience a brief loss of consciousness. Other symptoms include headache, dizziness, memory loss, attention deficit, depression and anxiety. Some of these conditions may persist for months or even years in as many as 30 percent of patients.

Dr. Lipton and colleagues set out to determine the post-concussion symptoms and health-related quality of life for a group of patients with MTBI one year post-injury. The researchers recruited 17 patients with MTBI from the Emergency Department of Montefiore Medical Center. Within two weeks of their injury, the patients underwent diffusion tensor imaging (DTI), which measures the direction of movement of water molecules within and along axons, which comprise the bundles of nerve fibers in the brain’s white matter.

**Slate:**

“In a traumatic brain injury, it’s not one specific area that is affected but multiple areas of the brain connected with axons,” Dr. Lipton said.

Using DTI, the researchers measured the uniformity of water flow (called fractional anisotropy or FA) throughout the brain, pinpointing areas with low FA, which are indicative of axonal injury, and areas with abnormally high FA, as compared to healthy brains.

“Abnormally low FA within white matter has been associated with cognitive impairment in patients with TBI,” Dr. Lipton said. “We believe that high FA is evidence not of axonal injury, but of brain changes that are occurring in response to the trauma.”

**Slate:**

One year after their brain injury, the patients completed two standard questionnaires to assess their post-concussion symptoms and evaluate their health status and quality of life.

Comparing the DTI data to the patient questionnaires, the researchers found that the presence of abnormally high FA was a predictor of fewer post-concussion symptoms and higher functioning.

The results suggest that in patients who exhibit areas of high FA on DTI the brain may be actively compensating for its injuries.

“These results offer us a new opportunity for treatment by finding ways to enhance the brain’s compensatory mechanisms.” Dr. Lipton said.

**Slate:**

The following visuals show:

1. Soundbites with Michael Lipton, M.D., Ph.D.
2. Footage showing a radiologic technologist preparing a patient before he enters a magnetic resonance imaging (MRI) scanner.
3. Footage showing a patient being unloaded from an MRI scanner.
4. Footage showing brain magnetic resonance (MR) images.
5. Footage showing brain MR images on a monitor.
6. Footage showing diffusion tensor imaging (DTI) delineating nerve fiber pathways in the brain of a patient with traumatic brain injury (TBI).
7. Footage showing multiple views of a brain MR image.
8. Still image:
  - Areas of abnormal fractional anisotropy (FA) are shown in three mild traumatic brain injury (MTBI) patients two weeks post-injury. Red indicates areas with abnormally low FA, consistent with axonal injury due to traumatic brain injury (TBI). Blue indicates regions with abnormally high FA, which may represent a compensatory response. Note the difference in spatial distribution of abnormality among the three patients.

**Slate:**

Segment 2

**Active Lifestyle Boosts Brain Structure and Slows Alzheimer’s Disease**

Embargoed for release at 12:01 a.m. ET, Monday, Nov. 26

**Slate:**

An active lifestyle helps preserve gray matter in the brains of older adults and could reduce the burden of dementia and Alzheimer’s disease (AD), according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA).

Dementia exacts a staggering toll on society. More than 35 million people worldwide are living with the disease, according to the World Health Organization, and the prevalence is expected to double by 2030. AD is the most common cause of dementia and currently has no cure.

**Slate:**

Cyrus Raji, M.D., Ph.D., radiology resident at the University of California in Los Angeles, and colleagues recently examined how an active lifestyle can influence brain structure in 876 adults, average age 78 years, drawn from the multisite Cardiovascular Health Study. The patients' condition ranged from normal cognition to Alzheimer's dementia.

"We had 20 years of clinical data on this group, including body mass index and lifestyle habits," Dr. Raji said. "We drew our patients from four sites across the country, and we were able to assess energy output in the form of kilocalories per week."

The lifestyle factors examined included recreational sports, gardening and yard work, bicycling, dancing and riding an exercise cycle.

**Slate:**

The researchers used magnetic resonance imaging (MRI) and a technique called voxel-based morphometry to model the relationships between energy output and gray matter volume.

"Voxel-based morphometry is an advanced method that allows a computer to analyze an MR image and build a mathematical model that helps us to understand the relationship between active lifestyle and gray matter volume," Dr. Raji said. "Gray matter volume is a key marker of brain health. Larger gray matter volume means a healthier brain. Shrinking volume is seen in Alzheimer's disease."

After controlling for age, head size, cognitive impairment, gender, body mass index, education, study site location and white matter disease, the researchers found a strong association between energy output and gray matter volumes in areas of the brain crucial for cognitive function. Greater caloric expenditure was related to larger gray matter volumes in the frontal, temporal and parietal lobes, including the hippocampus, posterior cingulate and basal ganglia. There was a strong association between high energy output and greater gray matter volume in patients with mild cognitive impairment and AD.

**Slate:**

"Gray matter includes neurons that function in cognition and higher order cognitive processes," Dr. Raji said. "The areas of the brain that benefited from an active lifestyle are the ones that consume the most energy and are very sensitive to damage."

A key aspect of the study was its focus on having variety in lifestyle choices, Dr. Raji noted.

“What struck me most about the study results is that it is not one but a combination of lifestyle choices and activities that benefit the brain,” he said.

**Slate:**

Dr. Raji said the positive influence of an active lifestyle on the brain was likely due to improved vascular health.

“Virtually all of the physical activities examined in this study are some variation of aerobic physical activity, which we know from other work can improve cerebral blood flow and strengthen neuronal connections,” he said.

“Additional work needs to be done,” Dr. Raji added. “However, our initial results show that brain aging can be alleviated through an active lifestyle.”

**Slate:**

The following visuals show:

1. Soundbites with Cyrus Raji, M.D., Ph.D.
2. Footage showing Dr. Raji examining brain magnetic resonance (MR) images.
3. Animation showing how an active lifestyle can help increase gray matter volume within the brain. Larger gray matter volume with aging means a healthier brain. This effect is seen in normal and Alzheimer’s dementia patients.
4. Animation showing how an active lifestyle improves brain structure in both normal individuals and people with Alzheimer’s disease.

**Slate:**

Segment 3

**Scatter Radiation from Mammography Presents No Cancer Risk**

Embargoed for release at 12:01 a.m. ET, Tuesday, Nov. 27

**Slate:**

The radiation dose to areas of the body near the breast during mammography is negligible, or very low, and does not result in an increased risk of cancer, according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA). The results suggest that the use of thyroid shields during mammography is unnecessary.

“Thyroid shields can impede good mammographic quality and, therefore, are not recommended during mammography,” said Alison L. Chetlen, D.O., assistant professor of radiology at Penn State Hershey Medical Center.

During mammography, some X-rays scatter away from the primary beam in the breast and spread outward in different directions. Although this scatter radiation is much weaker than the primary beam, there has been concern that women exposed to it during mammography could face an increased risk of cancer, especially in radiosensitive areas like the thyroid gland.

**Slate:**

To better understand the potential impact of scatter radiation, Dr. Chetlen and colleagues set out to measure the dose received by the thyroid gland, salivary gland, sternum, uterus and the lens of the eye during screening digital mammography. Each of the 207 women in the study group wore six optically stimulated luminescent dosimeters—a device used to measure an absorbed dose of ionizing radiation—while undergoing two-view screening mammography.

Analysis of the dosimeters by a medical physicist immediately after the exam revealed that the doses to the various areas outside of the breast ranged from negligible to very low.

**Slate:**

Absorbed radiation dose is measured in a unit called a milligray (mGy). The average estimated organ dose to the salivary gland was 0.05 mGy. The average estimated organ dose to the thyroid gland was 0.05 mGy. These doses are only a fraction of the radiation people are exposed to from natural background sources, such as cosmic radiation and radionuclides in the ground. In fact, all areas except for the sternum received less than 2 percent of annual background radiation dose.

Measured dose to the bridge of the eye and umbilicus was negligible, indicating no increased risk to the patient of cataracts or interference with normal embryonic development in early pregnancy.

“The risk of cancer induction at these low levels is indistinguishable from background incidence of cancer due to other sources,” Dr. Chetlen said.

**Slate:**

The findings are particularly important in light of a recent increase in the incidence of thyroid cancer, one of the most radiosensitive of all cancers. The number of thyroid cancer diagnoses in women nearly doubled from 2000 to 2008, leading some to suspect that mammography may be a contributing factor and that women should wear lead thyroid shields during exams, an idea that Dr. Chetlen and other mammography experts strongly discourage.

Based on the extremely low scatter radiation dose to the thyroid—equivalent to just a few minutes of background radiation—thyroid shields are unnecessary during mammography. In addition, the researchers warn that use of thyroid shields could result in an increased radiation dose to patients.

**Slate:**

“A thyroid shield gets in the way of the exam and can actually cause an increase in radiation dose by necessitating repeat exams,” Dr. Chetlen said.

Dr. Chetlen also pointed out that the thyroid gland is far less radiosensitive after age 30. The American Cancer Society and other organizations recommend that women have mammography screening once every year, beginning at age 40.

“In the age group eligible for screening, the thyroid gland is not very radiosensitive,” Dr. Chetlen said.

**Slate:**

The following visuals show:

1. Footage showing a patient undergoing mammography.
2. Footage showing a radiologist reviewing mammography images.

**Slate:**

Segment 4

**CT Depicts Racial Differences in Coronary Artery Disease**

Embargoed for release at 12:01 a.m. ET, Wednesday, Nov. 28

**Slate:**

While obesity is considered a cardiovascular risk factor, a study presented today at the annual meeting of the Radiological Society of North America (RSNA) showed that African-American patients with coronary artery disease (CAD) have much less fat around their hearts compared to Caucasian patients.

“Prior evidence suggests that increased fat around the heart may be either an independent marker of CAD burden or a predictor of the future risk of acute coronary events,” said U. Joseph Schoepf, M.D., professor of radiology and medicine and director of cardiovascular imaging at the Medical University of South Carolina in Charleston, S.C. “You would think that African Americans, who have a higher prevalence of CAD, would have higher rates of thoracic fat in an acute chest pain setting. However, this was not the case. White patients had significantly higher thoracic fat volumes than African-American patients.”

**Slate:**

According to the Centers for Disease Control and Prevention, coronary heart disease is the leading cause of death for people of most ethnicities in the United States. In 2010, the age-adjusted prevalence of coronary heart disease was 6.5 percent among African Americans, compared to 5.8 percent among Caucasians.

“We were very interested in finding an explanation for the racial difference in CAD and suspected differences in thoracic adipose tissue between races might be one of the contributing factors,” said Paul Apfaltrer, M.D., from the Institute of Clinical Radiology and Nuclear Medicine, University Medical Center Mannheim, Heidelberg University, Germany.

**Slate:**

For the study, researchers evaluated cardiac dual-source CT images of 411 age- and gender-matched African-American and Caucasian patients, quantifying thoracic fat volumes, including epicardial adipose tissue (EAT)—body fat that is in direct contact with the heart—and mediastinal adipose tissue, which is body fat within the chest cavity. Results showed that while the prevalence of significant stenosis, or narrowing of the

coronary ducts, and plaque was similar in African-American and Caucasian patients, African-American patients had less fat around their hearts.

The findings, Drs. Schoepf and Apfaltrer say, are surprising, given the higher number of cardiac and metabolic disorders among African Americans despite presence of less fat in the chest cavity. The researchers suggest that EAT may actually act as a protective buffer, or that it may be related to plaque maturation including calcification, and could contribute to lower risk of acute coronary events.

“Understanding the mechanism behind the racial disparities we found may improve the prevention, risk stratification and management of CAD,” Dr. Schoepf said.

**Slate:**

The following visuals show:

1. Footage showing a patient undergoing a computed tomography (CT) scan.
2. Footage showing a radiologic technologist reviewing CT images from the control room.
3. Footage showing 3-D cardiac CT images.
4. Footage showing chest CT images with layering technique.

**Slate:**

Segment 5

**Men with Belly Fat at Risk for Osteoporosis**

Embargoed for release at 12:01 a.m. ET, Wednesday, Nov. 28

**Slate:**

Visceral, or deep belly, obesity is a risk factor for bone loss and decreased bone strength in men, according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA).

“It is important for men to be aware that excess belly fat is not only a risk factor for heart disease and diabetes, it is also a risk factor for bone loss,” said Miriam Bredella, M.D., radiologist at Massachusetts General Hospital and associate professor of radiology at Harvard Medical School in Boston.

According to the National Center for Health Statistics, more than 37 million American men over age 20 are obese. Obesity is associated with many health problems, including cardiovascular diseases, diabetes, high cholesterol, asthma, sleep apnea and joint diseases. Yet despite all the health issues, it was commonly accepted that men with increased body weight were at lower risk for bone loss.

**Slate:**

“Most studies on osteoporosis have focused on women. Men were thought to be relatively protected against bone loss, especially obese men,” Dr. Bredella said.

But not all body fat is the same. Subcutaneous fat lies just below the skin, and visceral or intra-abdominal fat is located deep under the muscle tissue in the abdominal cavity. Genetics, diet and exercise are all contributors to the level of visceral fat that is stored in the body. Excess visceral fat is considered particularly dangerous, because in previous studies it has been associated with increased risk for heart disease.

After the Osteoporotic Fractures in Men Study—a multi-center observational study designed to determine risk factors for osteoporosis—indicated that male obesity was associated with fracture risk, the researchers wanted to quantify belly fat and study its impact on bone strength.

**Slate:**

Dr. Bredella and her team evaluated 35 obese men with a mean age of 34 and a mean body mass index (BMI) of 36.5. The men underwent CT of the abdomen and thigh to assess fat and muscle mass, as well as very high resolution CT of the forearm and a technique called finite element analysis (FEA), in order to assess bone strength and predict fracture risk.

“FEA is a technique that is frequently used in mechanical engineering to determine the strength of materials for the design of bridges or airplanes, among other things,” Dr. Bredella said. “FEA can determine where a structure will bend or break and the amount of force necessary to make the material break. We can now use FEA to determine the strength or force necessary to make a bone break.”

**Slate:**

In the study, the FEA analysis showed that men with higher visceral and total abdominal fat had lower failure load and stiffness, two measures of bone strength, compared to those with less visceral and abdominal fat. There was no association found between age or total BMI and bone mechanical properties.

“We were not surprised by our results that abdominal and visceral fat are detrimental to bone strength in obese men,” Dr. Bredella said. “We were, however, surprised that obese men with a lot of visceral fat had significantly decreased bone strength compared to obese men with low visceral fat but similar BMI.”

The results also showed that muscle mass was positively associated with bone strength.

**Slate:**

The following visuals show:

1. Soundbites with Miriam Bredella, M.D.
2. Footage showing a radiologic technologist preparing a patient for a computed tomography (CT) scan of the forearm.
3. Footage showing a series of forearm CT images on a monitor.
4. Footage showing Dr. Bredella consulting with a patient.
5. Footage showing Dr. Bredella consulting with another radiologist in a reading room.

**Slate:**

Portions of this B-roll were filmed at:  
Albert Einstein College of Medicine  
Massachusetts General Hospital  
Seattle Cancer Care Alliance  
The University of Chicago Hospitals  
University of Pittsburgh Medical Center

**Slate:**

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