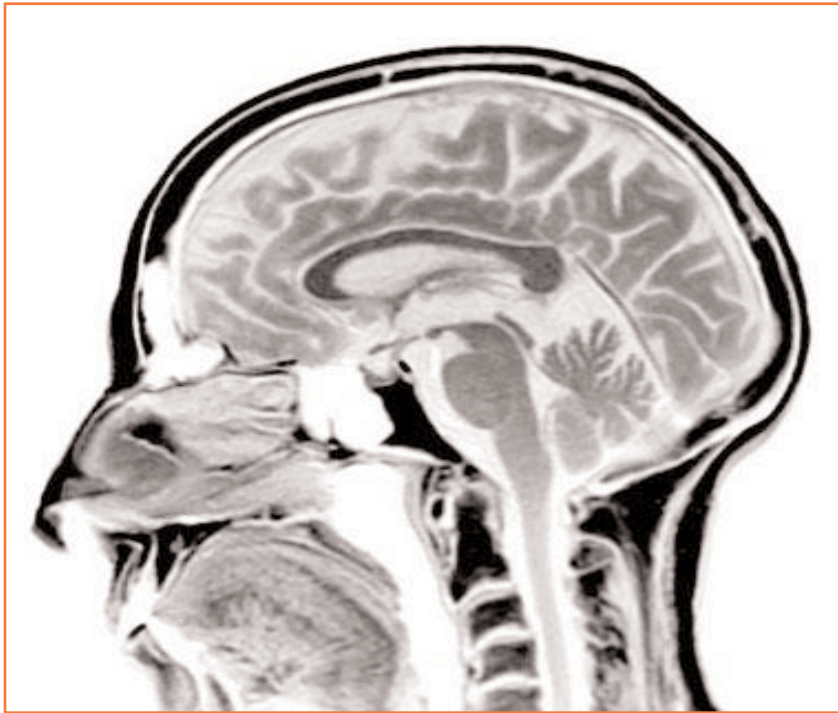
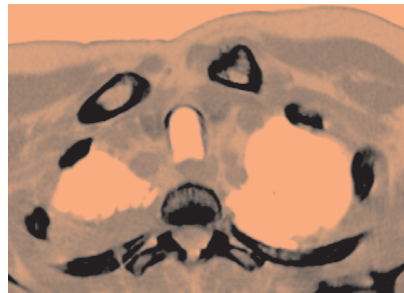


AMERICAN COLLEGE OF RADIOLOGY IMAGING NETWORK



ABSTRACT PRESENTATIONS
AND NETWORK OVERVIEW

NOVEMBER 30 -
DECEMBER 5



2008 RADIOLOGICAL SOCIETY OF NORTH AMERICA
ANNUAL MEETING

MCCORMICK PLACE
CHICAGO, IL

ACRIN
AMERICAN COLLEGE OF
RADIOLOGY
IMAGING NETWORK

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Abstract Presentations and Network Overview

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ACRIN Abstract Presentations Schedule

Sunday, November 30

10:45 am, Arie Crown Theater

Title: MRI assessment of breast cancer response to neoadjuvant chemotherapy: preliminary findings of the American College of Radiology Imaging Network (ACRIN) trial 6657

Authors: Hylton NM, Blume J, Bernreuter W, Pisano E, Rosen M, Morris E, Weatherall P, Lehman C, Polin S, Newstead G, Marques H, Schnall M, Esserman LJ, ACRIN 6657 Trial Team and I-SPY Investigators Network

10:45 am, Room E352

Title: National CT Colonography Trial (ACRIN 6664): Agree to Disagree: Do Reader Preferences Affect Performance at CTC?

Authors: Hara A, Blevins M, Chen M-H, Johnson CD

10:55, Room E352

Title: National CT Colonography Trial (ACRIN 6664): Are CT Colonography, Colonoscopy and Pathology Giving the Same Measures for Polyp Size?

Authors: Chen M-H, Blevins M, Herman BA, Johnson CD

11:55 am, Room E352

Title: ACRIN 6664 - Living on the High Plateau: Can Training and Testing Be Used to Ensure High Performance?

Authors: Fletcher JG, Herman BA, Chen M-H, Johnson CD

Monday, December 1

10:00 am, Arie Crown Theater

Title: Radiologist Analysis of ACRIN Digital Mammographic Imaging Screening Trial (DMIST) Cancer Cases - A Logistic Regression Model

Authors: Pisano E, Acharyya S, Cole E, Marques H, Blevins M, Yaffe M, Conant E, Hendrick RE, Baum J, Fajardo L, Jong R, Koomen M, Kuzmiak C, Lee Y, Wittaya P, Pavic D, Yoon S, Gatsonis C

10:50 am, Room E353C

Title: Local Institution versus Central Review Determination of SUV for Stage III Non-small Cell Lung Cancer: Preliminary Analysis of ACRIN 6668/RTOG 0235

Authors: Machtay M, Alavi A, Acharyya S, Saffer J, Snyder B, Siegel BA

Tuesday, December 2

11:10 am, Arie Crown Theater

Title: Reasons for Refusing a Screening Breast MRI in a Population of Women at Elevated Risk of Breast Cancer: ACRIN 6666

Authors: Berg W, Blume JD, Adams A, Jong RA, Barr RG, Lehrer DE, Pisano E, Evans WP, Mahoney MC, Larsen LH, Mendelson EB

11:50 am, Room S403B

Title: Estimated Radiation Dose to Participants Receiving Low-Dose Multi Detector CT Chest Scans in the National Lung Cancer Screening Trial (NLST)

Authors: Larke F, Cody D, Kruger R, Cagnon C, Flynn M, McNitt-Gray M, Wu X, Judy P

Wednesday, December 3

3:10 pm, Room S404CD

Title: Baseline characteristics of National Lung Screening Trial study population

Authors: David Lynch, MD (Presented on behalf of the National Lung Screening Trial investigators)

Thursday, December 4

10:30 am, Room E353A

Title: National CT Colonography Trial (ACRIN 6664): The Pursuit of Cleanliness: Effect of Preparation Type on Exam Quality and/or Performance at CTC?

Authors: Kuo M, Hara A, Blevins M, Chen M-H, Johnson CD

Abstract Presentations

Sunday, November 30

Title: MRI assessment of breast cancer response to neoadjuvant chemotherapy: preliminary findings of the American College of Radiology Imaging Network (ACRIN) trial 6657

Authors: Hylton NM, Blume J, Bernreuter W, Pisano E, Rosen M, Morris E, Weatherall P, Lehman C, Polin S, Newstead G, Marques H, Schnall M, Esserman LJ, ACRIN 6657 Trial Team and I-SPY Investigators Network

Time: 10:45 am

Location: Arie Crown Theater

Background/Purpose:

ACRIN 6657 is a multi-center study of MRI for measurement of breast tumor response to neoadjuvant chemotherapy. ACRIN 6657 is being performed as part of the national I-SPY trial, a collaborative trial of imaging and biomarkers for monitoring and guiding pre-operative treatment for women with breast cancer, involving CALGB, ACRIN, the NCI InterSPORE program and NCI Center for Bioinformatics.

Methods:

Women with T3 or greater invasive breast cancer receiving an anthracycline-cytosin (AC) neoadjuvant chemotherapy regimen followed by a taxane (T) were enrolled between May 2002 and March 2006. Contrast-enhanced MRI was performed prior to start of treatment (baseline), following 1 cycle AC (t2), between AC and T (t3), and after T but prior to surgery (t4). Tumor size measurements included clinical size (CS), mammographic longest diameter (MGLD), MRI LD, and MRI volume (MRV). Linear dimension was measured by the radiologist for MGLD and MRLD; MRV was calculated by computer using signal enhancement ratio thresholds. Size change was measured from baseline. Pathologic residual disease size (PS) was measured following surgery.

Results:

237 patients were enrolled at 9 institutions. Median age was 49; the racial distribution included 4% Asian, 19% African-American and 75% Caucasian subjects. 216 patients with complete imaging formed the preliminary analysis set. MRV showed the strongest correlation with pathologic size among t4 measurements of CS ($r=.43$), MGLD (ns), MRLD ($r=.28$) and MRV ($r=.61$). Change in MRV at t2 and t3 and change in MRLD at t3, were predictive of final clinical response. The strongest correlation for predicting end-of-treatment response after one cycle AC was found for MRV change ($r=.86$). In univariate logistic regressions, each size measurement was found to be predictive of disease progression.

Conclusions:

ACRIN 6657 is continuing to collect follow-up data toward the primary aim testing the ability of breast MRI to stratify post-treatment risk groups according to 3-year disease-free survival. In the preliminary comparison of clinical, mammographic and MRI measures of tumor size, MRI tumor volume was found to be most predictive of pathologic residual disease size and clinical response.

Abstract Presentations

Sunday, November 30

Title: National CT Colonography Trial (ACRIN 6664): Agree to Disagree: Do Reader Preferences Affect Performance at CTC?

Authors: Hara A, Blevins M, Chen M-H, Johnson CD

Time: 10:45 am

Location: Room E352

Background/Purpose:

To determine if specific interpretive preferences affect performance at CTC.

Methods:

2531 CTC were interpreted by 15 trained radiologists using colonoscopy as reference standard. Radiologists completed a questionnaire at start, end and 6 month intervals during the trial to assess CTC interpretation preferences. Effects of reader preferences on detecting patients with polyp(s) ≥ 10 mm were investigated by linking questionnaire completion and CTC review dates and pooling CTC performance per response.

Results:

Reader preferences at the start/end of study were highest for primary 2D interpretation (53%/47%), followed by no preference (40%/33%), and primary 3D interpretation (7%/20%). For readers reporting a primary 2D preference, performance was similar whether the reader used a primary 2D (sens/spec = 89/87%) or primary 3D (sens/spec=83/84%) method. Similarly, no differences using a primary 2D or 3D method were identified when readers indicated a primary 3D or no reading preference.

For primary 2D image review, better sensitivity with no significant decrease in specificity was obtained when axial images were the only images displayed on the monitor (sens=94%) versus when axial images were simultaneously displayed with 3D or MPR images (sens=74%), (P = 0.04).

CTC performance was not improved when prone images were evaluated in both directions versus just one direction only when done after evaluating supine images in both directions (ie rectum to cecum and reverse). Evaluation of multiplanar images also had no affect on performance.

There was no significant difference in CTC sensitivity when intracolonic abnormalities were immediately evaluated (sens = 88%) versus marked then later evaluated (sens = 85%); however, specificities were significantly different (spec = 85% vs 89%, P = 0.03).

Conclusions:

Reader preference for primary 2D or 3D interpretation did not correlate with improved performance using the preferred method. Performance using a primary 2D approach was improved when axial images were the only images displayed on the monitor. Other preferred methods yielded no significant differences in performance.

Abstract Presentations

Sunday, November 30

Title: National CT Colonography Trial (ACRIN 6664): Are CT Colonography, Colonoscopy and Pathology Giving the Same Measures for Polyp Size?

Authors: Chen M-H, Blevins M, Herman BA, Johnson CD

Time: 10:55

Location: Room E352

Background/Purpose:

The relationships of polyp size measurement between CT Colonography (CTC), colonoscopy and pathology are currently unknown. The purpose of this study is to determine if CTC, colonoscopy and pathology give the same size measurement for the same polyp.

Methods:

Polyps 5mm and larger as measured by either colonoscopy or local pathology, which were independently recorded in the same colonic segment at CTC, were matched for analysis. Colonoscopy, local and central pathology measurements of the polyp size were compared with CTC size using paired t-tests. To correct for the effects of multiple polyps from the same patient, a regression with generalized estimating equations modeled the relationship between CTC size and the size from colonoscopy and pathology.

Results:

There were 265 polyps with size ≥ 5 mm from either colonoscopy (185) or local pathology (80) that also had CTC measurements within the same segment; 247 specimens were sent to central pathology. The average (SE) polyp size at central pathology was smaller than the corresponding average (SE) measure from CTC [7.52 (0.32) vs 9.79 (0.52); $P < 0.001$]. The average (SE) size at colonoscopy was larger than the corresponding measure from CTC [11.24 (0.76) vs 10.04 (0.66); $P < 0.001$]. The average size at local pathology was less than the corresponding measure from CTC [8.85 (0.55) vs. 9.74 (0.75); $P = 0.047$]. After adjusting for multiple polyps per patient, colonoscopy measure was consistently 12% higher than the measure of CTC for the same polyp, while central pathology measure was consistently 25% smaller than the measure of CTC, regardless of the size of polyp.

Conclusions:

Colonoscopy gave significantly larger measurement than CTC for the same polyp on average. On the contrary, pathology measurement was significantly smaller than CTC measurement.

Abstract Presentations

Sunday, November 30

Title: ACRIN 6664 - Living on the High Plateau: Can Training and Testing Be Used to Ensure High Performance?

Authors: Fletcher JG, Herman BA, Chen M-H, Johnson CD

Time: 11:55 am

Location: Room E352

Background/Purpose:

To determine if training and testing prior to study participation can achieve high performance.

Methods:

Readers interested in joining the ACRIN National CT Colonography Trial participated in an abbreviated one-day training program and underwent certification testing prior to study launch. The certification test was comprised of 20 cases, with a threshold sensitivity of 90% for easy- and moderate-to-detect polyps/cancers. Readers who did not pass the first certification test were required to go through a second day of focused retraining and took a second exam. Sensitivities for all polyps (including difficult-to-detect polyps) from the certification exams were calculated, and compared to actual reader performance in a large, prospective screening study.

Results:

The fifteen readers who participated in the prospective study took and passed the certification tests before participating. Seven readers passed the certification test the first time it was offered, and eight readers passed after focused re-training. Sensitivities from the first certification test on all cases were significantly different between these two groups of readers after the short one-day training course (85% vs. 70%, $P < 0.001$). Significantly better sensitivities were obtained on the second vs. first certification test for the group of retrained readers (difference = 19%, $P < 0.001$). However, in the prospective study, no difference in sensitivity was observed between the two groups (88% vs. 92%, $P=0.52$). Slightly higher sensitivity was observed from the prospective study compared to the sensitivity from the last certificate exam taken for all readers, but the difference was not significant (difference = 3%, $P = 0.27$).

Conclusions:

A significant difference in performance was observed among readers before adequate training. Testing and focused retraining improved reader performance prior to the prospective CTC study and resulted in consistently high sensitivity across multiple readers.

Abstract Presentations

Monday, December 1

Title: Radiologist Analysis of ACRIN Digital Mammographic Imaging Screening Trial (DMIST) Cancer Cases - A Logistic Regression Model

Authors: Pisano E, Acharyya S, Cole E, Marques H, Blevins M, Yaffe M, Conant E, Hendrick RE, Baum J, Fajardo L, Jong R, Koomen M, Kuzmiak C, Lee Y, Wittaya P, Pavic D, Yoon S, Gatsonis C

Time: 10:00 am

Location: Arie Crown Theater

Background/Purpose: To evaluate the factors that may have contributed to the results of DMIST

Methods:

9 radiologist readers reviewed film and digital mammograms of the DMIST cancer cases and assessed factors contributing to lesion visibility on both modalities. Generalized logistic regression models were used to analyze the combined and condensed visibility ratings assigned by the readers to the paired images from the two modalities.

Results:

Radiologist readers most frequently attributed differences in DMIST cancer visibility to variations in image contrast and not to differences in positioning or compression between digital and film mammography. The analysis shows that the odds of lesion being more visible on digital (relative to being equally visible on digital and film) were significantly greater for women with dense breasts (relative to women with non-dense breasts), even when adjusted for age, lesion-type, and mammography system (OR= 2.15, $p<0.0001$). Reader ratings indicated that the odds of cancers being more visible on digital mammography (relative to being equally visible on digital and film mammography) are significantly greater for cases imaged using the General Electric digital mammography system compared with the Fischer ($p=0.0051$) and Fuji ($p=0.0068$) products tested.

Conclusions:

These results show that the statistically significant better diagnostic accuracy of digital over film mammography for women with dense breasts that was demonstrated in DMIST is most likely attributable to differences in image contrast, most likely due to the inherent system performance improvements available with digital mammography. We hypothesize that DMIST results are attributable to differences in display and acquisition characteristics of the devices themselves rather than reader variability.

Abstract Presentations

Monday, December 1

Title: Local Institution Versus Central Review Determination of SUV for Stage III Non-small Cell Lung Cancer: Preliminary Analysis of ACRIN 6668/RTOG 0235

Authors: Machtay M, Alavi A, Acharrya S, Saffer J, Snyder B, Siegel BA

Date: 10:50 am

Location: Room E353C

Background/Purpose:

ACRIN 6668/RTOG 0235 is a prospective multicenter study of the use of FDG-PET scanning for staging and restaging of Stage III non-small cell lung carcinoma before and after definitive chemoradiotherapy. Specifically, this study evaluates the utility of tumor standardized-uptake values (SUV) as a potential biomarker. This report is a preliminary (interim) analysis of the reproducibility of the primary tumor SUV calculation between the local institution and the central review core facility at ACRIN.

Methods:

Pre-treatment FDG-PET scans from 55 patients and post-treatment FDG-PET scans from 40 patients were analyzed. SUV data (SUV_{max}) were determined at local institutions and reported to ACRIN on data collection forms. The actual PET-FDG datasets were sent electronically to ACRIN for central review, where SUV was determined in a manner “blinded” to the local institutional review. Pearson and Concordance correlations were performed.

Results:

The mean pre-treatment SUV values, as determined by local and central reviews, were 9.02 and 9.88 respectively (Pearson correlation = 0.626; Concordance correlation = 0.611). There were 12 cases (22%) where the local and central review SUV differed by at least 3.0 absolute points. The mean post-treatment SUV values, as determined by local and central reviews, were 2.66 and 2.30 respectively (Pearson correlation = 0.674; Concordance correlation = 0.639). There were 3 cases (7.5%) where the local and central review SUV differed by at least 3.0 absolute points. There were 9 cases (22.5%) where the local and central review SUV differed by at least 1.5 absolute points. The overall differences between the local and central SUV were not statistically significant ($p=0.127$ for pre-treatment SUV; $p=0.668$ for post-treatment SUV).

Conclusions:

There was good but imperfect correlation between institutional and centrally determined SUV for NSCLC. Correlation appeared to be slightly better for post-treatment than pre-treatment SUV.

Abstract Presentations

Tuesday, December 2

Title: Reasons for Refusing a Screening Breast MRI in a Population of Women at Elevated Risk of Breast Cancer: ACRIN 6666

Authors: Berg W, Blume JD, Adams A, Jong RA, Barr RG, Lehrer DE, Pisano E, Evans WP, Mahoney MC, Larsen LH, Mendelson EB

Time: 11:10 am

Location: Arie Crown Theater

Background/Purpose:

To determine reasons for nonparticipation in a trial of supplemental screening with magnetic resonance imaging (MRI) after mammography (M) and ultrasound (US).

Methods:

In the original ACRIN 6666 protocol of supplemental screening US in women at elevated risk of breast cancer, 2809 participants were enrolled at 21 institutions. Fourteen institutions met technical and experience requirements for a substudy of supplemental screening with MRI and obtained IRB approval. Eligible participants in the original trial who had completed 0, 12, and 24 month screens with M+US were considered for a single contrast-enhanced MRI examination within 8 weeks of completing the 24 month M+US screen. 1549/2023 (76.6%) participants enrolled from the fourteen approved institutions had completed their 24 month screens in the required time period. Reasons for nonparticipation were collected, and demographics of those participating were compared to those not participating.

Results:

Of the 1549 women, 400 women could not be enrolled due to site not yet approved by IRB, not eligible by protocol (due to recent breast surgery, biopsy, metastatic disease, other), or not able to be contacted. Of the 1149 remaining women, 697 (60.7%) agreed to enroll in the MR substudy and 452 (39.3%) did not. Of the 452 nonparticipants, 80 (17.7%) refused due to claustrophobia; 78 (17.3%) due to time constraints; 60 (13.3%) due to financial concerns (though ACRIN would fund if insurance would not); 48 (10.6%) due to medical inability to tolerate MRI; 47 (10.4%) due to patient or physician doesn't feel MRI is indicated; 38 (8.4%) not interested; 28 (6.2%) didn't want i.v. injection; 26 (5.7%) were concerned about extra biopsies or testing that might result; 24 (5.3%) were precluded by MRI scheduling/availability; for 12 (2.7%), distance or travel to the site were problematic; 7 (1.5%) were concerned about gadolinium/NSF/allergic reaction; and 4 (0.9%) other. The mean age of participants was 54.9 years (range 25-85, SD 9.5). Participants were slightly more likely to be Caucasian (OR 1.82, 95% CI 1.07, 3.09). There were no other differences in race, ethnicity, insurance status, risk factor eligibility, menopausal status, prior imaging history, hormone use, or bra cup size, between participants and either nonparticipants or the overall ACRIN 6666 study population.

Conclusions:

Of 1149 women at elevated risk of breast cancer who could, by protocol, have a breast MRI at no cost, only 60.7% agreed to participate.

Abstract Presentations

Tuesday, December 2

Title: Estimated Radiation Dose to Participants Receiving Low-Dose Multi Detector CT Chest Scans in the National Lung Cancer Screening Trial (NLST)

Authors: Larke F, Cody D, Kruger R, Cagnon C, Flynn M, McNitt-Gray M, Wu X, Judy P

Time: 11:50 am

Location: Room S403B

Background/Purpose:

Integral to meeting the main objective of the NLST to determine whether lung cancer screening of a high risk cohort with "low dose" CT vs chest x-ray reduces lung cancer specific mortality, is an estimation of the radiation dose to participants receiving either of these two screening methods. This work reports on the estimated dose from low-dose CT scans. A companion work discusses dose from chest x-ray.

Methods:

During the screening period of 2003-2007, CT dose data were collected annually from 96 multi detector scanners at the NLST participating sites. The scan parameters employed in the measurements and calculations reflected the clinical parameters locally selected at each site and scanner for an average size participant, within the confines of the overall NLST CT specifications. From these data, CTDIvol values were calculated. An estimate of effective (whole body) dose to a standard size adult was determined by utilizing the approach developed by the European Working Group for Guidelines on Quality Criteria in Computed Tomography. Utilizing our calculated CTDIvol values, a radio sensitivity "k" coefficient for chest = .017 mSv/mGy-cm, and a typical scan length of 35 cm resulted in a range of CT effective dose values for the trial that could be used to represent the effective dose to a standard size adult.

Results:

The mean CTDIvol equaled 3.4 mGy, with a standard deviation of 1.7 mGy. This equated to a mean effective dose for a standard size adult of 2.0 mSv, with a standard deviation equal to 1.0 mSv.

Conclusions:

The CT exposure measurements and dose calculations performed during the NLST result in an estimated average effective dose to a standard size adult equal to 2.0 mSv, with a standard deviation of 1.0 mSv. This indicates a significant variation in dose among all sites and scanners, reflecting the dose range among sites that was felt necessary to achieve adequate image quality. For comparison, the dose for a typical standard chest CT is 8-9 mSv.

Abstract Presentations

Wednesday, December 3

Title: Baseline characteristics of National Lung Screening Trial study population

Authors: David Lynch, MD (Presented on behalf of the National Lung Screening Trial investigators)

Time: 3:10 pm

Location: Room S404CD

Background/Purpose:

To provide a detailed description of the demographics and the smoking, medical and occupational histories of the study population of the National Lung Screening Trial (NLST).

Methods:

The NLST is a randomized trial of individuals at high risk of lung cancer. These individuals were randomized to receive either low dose helical CT or chest radiographs annually for three years. The primary endpoint of the NLST is lung cancer specific mortality. Thirty three sites across the United States participate in the study. Participants were required to be between the ages of 55 and 74 years, with a current or former cigarette smoking history of at least 30 pack-years. Former smokers were required to have quit smoking no more than 15 years before enrollment. Exclusion criteria included previous history of lung cancer at any time, or other cancers within 5 years; history of chest CT within 18 months or chest radiograph within 6 months before enrollment. Randomization was performed within site, sex and five year age group categories. Data were acquired from questionnaires administered at enrollment. Data from the Tobacco Use Supplement of the U.S. Census Current Population Surveys for the years of NLST enrollment were used to identify the demographic characteristics of individuals from the general population who met NLST inclusion criteria.

Results:

Enrollment began in August 2002, and was completed in April 2004, 4 months ahead of schedule. 53,476 individuals were enrolled. 26,745 were randomized to chest radiograph, and 26,731 were randomized to CT. 57% were male, and 73% were under 65 years of age. 53% were former smokers, and 47% were current smokers. 4.6% had a history of previous asbestos exposure. 21.3% had a family history of lung cancer. 31% had a college or higher degree, while 6% had less than a high school education. Current smokers had a median cigarette exposure of 48 pack-years, while former smokers had a median exposure of 49 pack-years. Demographic features did not differ between study arms. The Census data for individuals meeting NLST entry criteria showed that 59% were male, 62% were under 65 years old, and 58% were current smokers. Median cigarette exposure was 47 pack years. 14% had a college or higher degree, and 20% had less than a high school education.

Conclusions:

The NLST cohort is broadly comparable to the component of the general US population that meets the major NLST eligibility criteria, though younger, better educated, and less likely to be current smokers.

Abstract Presentations

Thursday, December 4

Title: National CT Colonography Trial (ACRIN 6664): The Pursuit of Cleanliness: Effect of Preparation Type on Exam Quality and/or Performance at CTC?

Authors: Kuo M, Hara A, Blevins M, Chen M-H, Johnson CD

Time: 10:30 am

Location: Room E353A

Background/Purpose:

Currently, there is no accepted standardized method of performing the CT Colonography (CTC) bowel cleansing. The purpose of this study is to determine if specific bowel cleansing techniques affect the performance at CTC.

Methods:

Three different cathartic preparations were used depending on institutional standard of care: polyethylene glycol (PEG), phosphosoda (PS), or magnesium citrate (MC). All CTC readers completed a questionnaire which graded the amount of stool and fluid present in each segment on a 4-point scale: 1-none, 2-minimal, 3-moderate, 4-non-diagnostic. The worst assessment for all segments was recorded as overall fluid/stool grade. CTC exams were then evaluated for polyp detection. Colonoscopy was performed immediately following CTC to serve as the reference standard.

Results:

2531 CTC exams were performed at 15 institutions as part of the ACRIN 6664 multicenter trial. Among them, 1020 used PEG, 1403 used PS, 102 used MC and 6 others. Nearly all (N = 2507) preparations included bisacodyl tablets. The median score for residual fluid/stool was 2/2 for PEG, 2/2 for PS and 3/2 for MC. MC was more likely to retain fluid than PEG or PS (P = 0.01). PS resulted in significantly less stool than PEG or MC (P < 0.001).

The effect of fluid/stool cleansing did not associate with sensitivity, but specificity decreased as the score for stool increased. The average sensitivity/specificity for patients with polyps ≥ 10 mm was 86/86% for PEG, 85/88% for PS and 100/61% for MC. There was no statistical difference among the preparations in sensitivity.

Conclusions:

MC had the worst fluid clearance, while PS had the best stool clearance among the three types of preparations used in this study. Although the fluid/stool retention differed among the three preparations, the sensitivity was not significantly different across the preparations. Specificity decreased as more stool was retained.

A Decade of Progress

Since the network's inception in 1999, ACRIN has evolved to be a critical component of the National Cancer Institute's clinical trials endeavor and a respected part of the cancer research and advocacy community. Major milestones are presented that chronicle ACRIN's role in transforming the practice of radiology and contributions to the imaging community.

Date	Milestone
Jan. 1998	ACR Board Chair Ronald Evens, MD recruits Bruce Hillman, MD to respond to the NCI's request for application to implement a medical imaging research network.
Mar. 1999	ACRIN receives funding commitment of \$ 23 million to establish a network and to conduct multi-center clinical trials through January 2003 under the direction of Bruce Hillman, MD. Constantine Gatsonis, PhD, leads a linked biostatistics and data management grant and works with Dr. Hillman to develop the nascent network.
Nov. 1999	ACRIN launches its first multi-center clinical trial: Role of Radiology in the Pretreatment Evaluation of Invasive Cervical Cancer (ACRIN 6651) in cooperation with the GOG cooperative group.
July 2000	A retrospective study of CT colonography is activated; the results are critical for justifying a future prospective trial.
Sept. 2001	The first ACRIN Fall Meeting open to all interested in ACRIN research is held in Arlington, VA. Nearly 250 attend.
Oct. 2001	ACRIN launches the digital mammography trial (ACRIN 6652 – DMIST) with \$ 26.5 million of supplemental funding from the NCI.
Aug. 2002	ACRIN launches the National Lung Screening Trial (ACRIN 6654 – NLST) with \$ 100 million of supplemental funding from the NCI. Nearly 20,000 participants are enrolled by August 2004.
May 2002	ACRIN collaborates with NCI cooperative group CALGB to conduct the trial <i>Contrast-Enhanced Breast MRI for Patients Undergoing Neoadjuvant Treatment for Locally Advanced Breast Cancer</i> . Nesting an imaging trial in the context of a therapeutic trial becomes an important and often followed ACRIN model.
Sept. 2003	The first results of an ACRIN trial are published in the peer-reviewed journal, <i>Gastroenterology</i> "Computerized Tomographic Colonography: Performance Evaluation in a Retrospective Multicenter Setting."
Mar. 2004	ACRIN receives a renewal funding commitment of nearly \$ 16 million to conduct multi-center clinical trials of medical imaging through December 2007 under the direction of Bruce Hillman, MD and Constantine Gatsonis, PhD.
Feb. 2005	The National CT Colonography Trial is launched with \$ 7 million of supplemental funding from the NCI
May 2005	The National Oncologic PET Registry is launched. Managed by ACRIN, nearly 1800 facilities are participating by 2008 with over 100,000 patients enrolled. The goal of NOPR is to provide data to expand reimbursed uses of PET for cancer.

A Decade of Progress

Sept. 2005	The first time ACRIN trial results are published in the <i>New England Journal of Medicine</i> . “Diagnostic Performance of Digital vs. Film Mammography for Breast Cancer Screening”
May 2006	In an effort led by Dr. Hillman and the ACR, \$ 7 million is raised for the ACRIN Fund for Innovative Imaging. The ACR contributes \$ 2 million. General Electric and Siemens each contribute \$ 1 million. The fund is first used to establish the ACRIN cardiovascular committee and fund a study of the value of computer-aided detection (CAD) for digital mammography study.
Nov. 2006	The first ACRIN PA trial is launched: A Multi-Center Trial on MR Image Markers of Knee Articular Cartilage Damage in Osteoarthritis - funded by the Pennsylvania Dept. of Health’s Commonwealth Universal Research Enhancement Program with funds from the Tobacco Settlement Act.
Mar. 2007	The results of the MRI Evaluation of the Contralateral Breast in Women With a Recent Diagnosis of Breast Cancer are published in the <i>New England Journal of Medicine</i> .
Jan. 2008	Bruce Hillman, MD, completes his two terms as ACRIN network chair as allowed for in the bylaws. Mitchell Schnall, MD, PhD, who served as deputy chair throughout Dr. Hillman’s tenure, assumes the role as network chair.
Mar. 2008	ACRIN receives funding commitment of nearly \$ 26 million to conduct multi-center clinical trials of medical imaging through January 2012 under the direction of Mitchell Schnall, MD, PhD.
May 2008	The <i>Journal of the American Medical Association</i> publishes “Combined Screening with Ultrasound and Mammography Compared to Mammography Alone: Results of the First-Year Screen in ACRIN 6666”
Sept. 2008	The National CT Colonography Trial results are published in the <i>New England Journal of Medicine</i> .
Oct. 2008	At the start of its 10 th year of operation, ACRIN has accrued over 76,000 participants, collected more than 20 million images and has published over 50 scientific papers. In addition, over \$100 million has been distributed to participating facilities in support of carrying out ACRIN research protocols.

ACRIN Scientific Objectives and Leadership

Research Goal

The American College of Radiology Imaging Network (ACRIN) is conceived as an integrated group of imaging researchers, other physician specialists, and basic and clinical scientists, patient advocates and a wide array of research support personnel. In the next funding period, ACRIN will continue to pursue its broad goal of:

Through clinical trials of diagnostic imaging and image-guided therapeutics technologies, ACRIN seeks to develop information that:

- Lengthens and improves the quality of cancer patients' lives
- Results in the earlier diagnosis of cancer

Primary Research Objectives

ACRIN has developed three primary research objectives that will drive scientific strategy and clinical trial development over the next funding period. These objectives support ACRIN's broad goal by establishing imaging as an important tool in the development and monitoring of targeted interventions for cancer treatment and prevention.

1. Screening of populations at high risk for cancer, including:
 - tailored, organ-specific screening
 - combining in vitro and imaging techniques
 - surveillance for recurrence
2. Diagnosing and staging disease to guide targeted therapy, including:
 - anatomical and functional characterization
 - image-guided therapy
 - imaging phenotype
3. Investigations of biomarkers of treatment response, including:
 - general response markers (anatomic and functional)
 - targeted response markers (perfusion), and adaptive trials

Scientific Leadership

Network Chair: Mitchell Schnall, MD, PhD
University of Pennsylvania

Deputy Co-chair: Denise Aberle, MD
UCLA

Deputy Co-chair: Barry Siegel, MD
Washington University

Network Statistician: Constantine Gatsonis, PhD
Brown University

ACRIN Scientific Objectives and Leadership

Scientific Committees

ACRIN's seven scientific committees develop research strategies that encompass both the network's overarching research agenda and critical imaging questions related to specific diseases. Information about the specific strategies of the committees listed below can be found on the ACRIN Web site at www.acrin.org.

Abdominal Committee

Chair: Fergus Coakley, MD
University of California – San Francisco

Breast Committee

Chair: Constance Lehman, MD, PhD
University of Washington

Gynecologic Committee

Chair: Mitchell Schnall, MD, PhD
Thomas Jefferson University

Head and Neck / Neurological Committee

Chair: Gregory Sorensen, MD
Massachusetts General Hospital

Thoracic Committee

Chair: Caroline Chiles, MD
Wake Forest University

Experimental Imaging Sciences Committee

Chair: David Mankoff, MD, PhD
University of Washington

Cardiovascular Committee

Chair: Pamela Woodard, MD
Washington University

ACRIN Participation

ACRIN has established a dynamic clinical trials infrastructure and developed numerous protocols since its establishment in 1999 as a National Cancer Institute clinical trials cooperative group. These trials have the potential for altering and expanding the role of medical imaging and image-guided therapy in the diagnosis and treatment of cancer. More recently, ACRIN has expanded its imaging research focus to include other disease processes such as cardiovascular, osteoarthritis, and Alzheimer's disease.

Investigators from all imaging settings and researchers from other disciplines with an interest in imaging are encouraged to participate in ACRIN research activities. Currently, nearly 100 academic and community-based medical facilities in the United States regularly participate in ACRIN clinical trials.

Participation Benefits

In addition to supporting research to enhance the practice of imaging, other rewards of ACRIN participation include the:

- Option to participate in one or several trials—depending upon an imaging interests and facility resources
- Potential for improving local medical care
- Opportunity to promote participation in cutting edge research
- Access to multicenter data for performing ancillary research
- Development of new or honing of existing skills
- Collaboration with international leaders in the field
- Enhance practice revenue
- Opportunity to advance research ideas

Who can Participate

ACRIN's network brings together of a wide range of professionals:

- Imagers from academic centers, community hospitals, and freestanding facilities
- Other specialty clinicians and methodologists with an interest in imaging
- Clinical research associates and imaging technologists
- Other cooperative groups
- Representatives of industry
- Health insurance payers

How to Participate

Visit the ACRIN Web site to learn how you can:

- Participate in one or more of ACRIN's clinical trials
- Join an ACRIN committee and learn about the goals of the various scientific and scientific support committees
- Attend the ACRIN Fall Meeting that is open to all interested.

www.acrin.org

ACRIN Funding Sources

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Avon Fiscal Year 2008 Funding: \$ 600,000



**Commonwealth Universal Research Enhancement Program
CURE Fiscal Year 2008 Funding: \$ 1,300,000**

ACRIN Fund for Imaging Innovation Contributors

Corporate Contributors

\$1,000,000 Contribution

ACR Foundation

GE Healthcare

Siemens Medical Solutions USA

\$250,000 Contribution

Bracco Diagnostics

Hologic

Toshiba America Medical Systems

\$500,000 Contribution

Agfa

Berlex (in concert with Schering, AG)

Philips Medical Systems

\$150,000 Contribution

Fujifilm Medical Systems USA

Vital Images

Hitachi

ACRIN Fund for Imaging Innovation Contributors

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E-Z-EM

Eastman Kodak Company

Individual Contributors

\$25,000 Contribution

Thomas B. Fletcher, MD, FACR

\$10,000 Contributions

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