The Cancer Center Newsletter

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Image Guided Radiation Therapy (IGRT) Capability in the Department of Radiation Oncology

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Background

Radiation Oncology transitioned from 2D to 3D to Intensity Modulated Radiation Therapy (IMRT) and Image Guided Radiation Therapy (IGRT) in the last decade due to the unparalleled advances in computer technology and 3D imaging (CT simulator, PET, PET/CT, MRI and SPECT). While IMRT made it possible to reduce the dose to the critical normal structures and to escalate the dose to the cancer targets in H&N and some pelvic cancers, it was not adequate to treat the cancers in the chest, abdomen and pelvis, due to inter- and intra-fraction motion of cancer targets. Cancer targets in the chest and abdomen move during the treatment (intra-fraction motion) due to breathing. Prostate position varies between the treatment days (inter-fraction motion) and during the radiation delivery (intra-fraction motion) due to continuous and differential fillings of the bladder and rectum during treatment days. Treatment of moving targets with fixed radiation ports could result in a geometric miss of the cancer targets and delivery of higher doses to normal structures.

IGRT was introduced to address inter- and intra-fraction organ motion and to precisely locate the position of moving cancer targets during the radiation treatment, to deliver tumoricidal doses to the targets and to minimize dose to the critical normal structures in the vicinity of the tumors. Examples of dose limiting normal

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Image Guided Radiation Therapy Capability

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structures in the case of prostate cancer are rectum and bladder and spinal cord and heart in the case of tumors in the abdomen and chest. Currently we are using Ultrasound (US) Image Guided Radiation Therapy using the Nomos Inc. BAT system to treat prostate cancer. This US based IGRT is not suitable for use at other cancer sites.

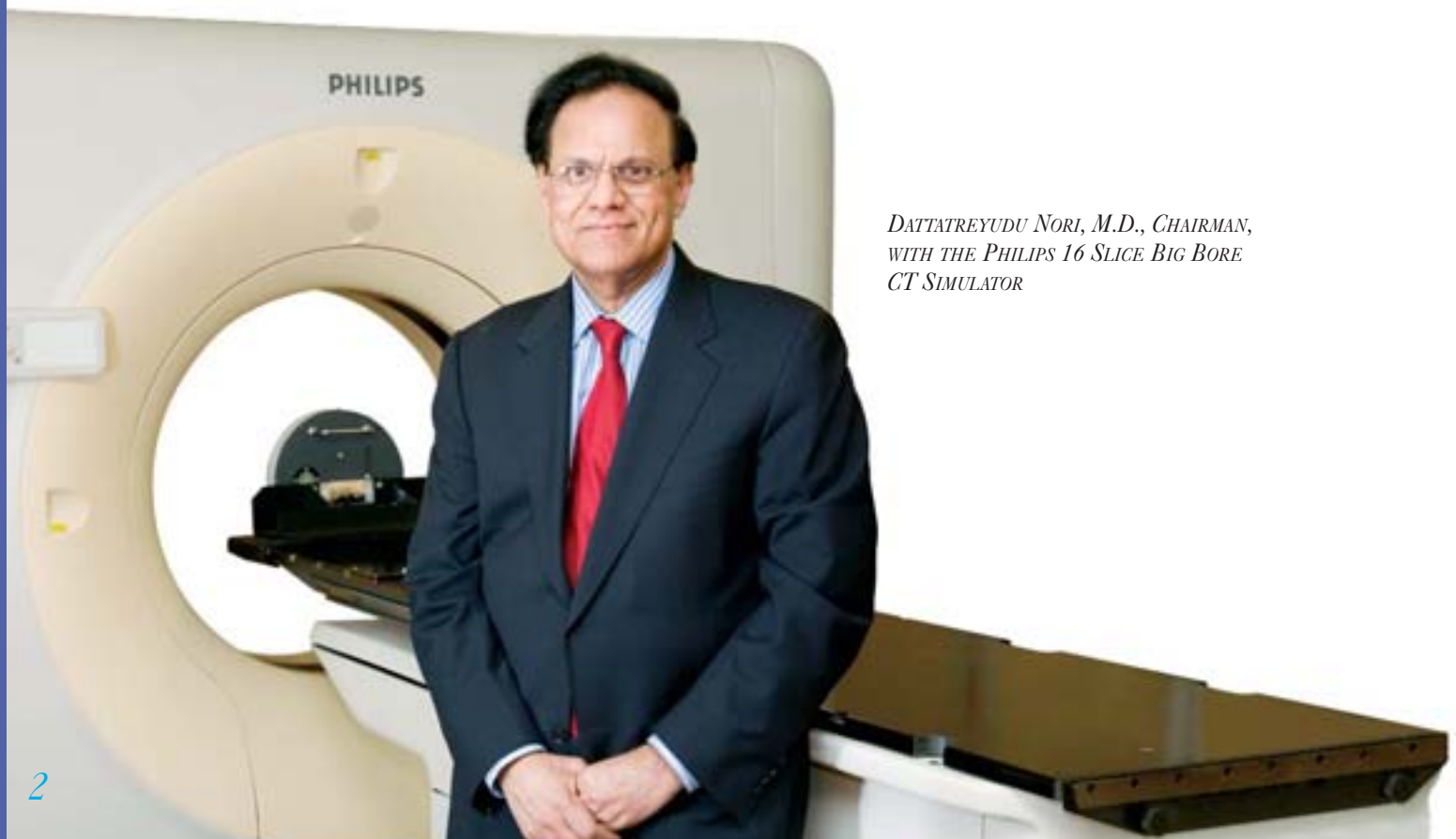
IGRT Methodologies

Ultrasound imaging (BAT system), or Kilovoltage (KV) or Megavoltage (MV)-Cone Beam (CB) CT 3D imaging, or respiratory gating or gold seed fiducial markers implanted in the tumor are the other modalities of IGRT being used to correct for target motion and to reduce geometric miss of prostate, lung and abdominal tumors during IMRT. Imaging of a given site is performed while the patient is positioned on the couch for treatment. This is called On Board Imaging (OBI) for IGRT. Gold fiducial marker location on orthogonal radiographs (2D, KV to KV), or CBCT based bone or soft tissue anatomy (3D to 3D), or ultrasound images of prostate, rectum and bladder, obtained on the day of treatment is compared with those obtained on the treatment planning day. This comparison will indicate if there is a shift of the target in the lateral (X), anterior-posterior (Y) and superior-inferior (Z) directions. The patient on the couch is then moved in X, Y, Z directions to correct for the target displacement and to bring the target in to the radiation port.

CBCT based IGRT is better than the other currently available IGRT techniques. This method can be used for 3D imaging of any anatomical site. However, the in house availability of a CT Simulator, such the Philips Brilliance Big Bore CT simulator, and a Linear Accelerator with CBCT as an on board imager, such as the Elekta Synergy S, are a prerequisite for CBCT based IGRT.

Philips Brilliance Big Bore CT/Simulator Becomes Functional

The Philips Brilliance Big Bore CT Simulator became functional in July 2007 and is being actively used to acquire 3D CT images of H&N, pelvis, chest and other sites with cancer. This unit has the most advanced technology to take CT scans of large patients at a high speed. These images are then sent to the Pinnacle computer workstations in the Radiation Oncologist's offices. They review the 3D anatomy and delineate tumor targets and critical normal structures. These images are then exported to Pinnacle-3 and Eclipse treatment planning computers.



Dattatreyudu Nori, M.D., Chairman, with the Philips 16 Slice Big Bore CT Simulator

The Elekta Synergy S Linear Accelerator with IGRT

These CT images form the basis for 3D and IMRT treatment plans and for the comparison of tumor size, location and shape during the treatment days utilizing IGRT.

Commissioning of the Elekta Synergy S Linear Accelerator with IGRT

The installation of the new Linear Accelerator from Elekta is complete. The on board imager on this Linear Accelerator is a KV-CBCT (kilovoltage Cone Beam CT). This state of the art Linear Accelerator with IGRT capability is currently being commissioned and will become functional in October 2007. This unit has two X-ray energies and 5 electron energies, which will enable us to treat deep-seated as well as superficial tumors.

Elekta Synergy is the world's first Linear Accelerator to feature integrated 3D volume imaging functionality. This allows an image of the tumor site with CT like quality to be acquired using Electa-XVI technology and to be reconstructed immediately before treatment, with the patient already set-up in the treatment position. Volume view image quality allows differentiation of soft tissues and thereby determination of the target's shape, size and location in relation to critical structures. Advanced automated registration tools allow rapid registration (comparison) against the CT treatment plan image. This allows for optimization of the treatment plan and correction for target shifts due to organ motion and deformation.

Electa Synergy Motion-view technology allows evaluation of patient motion while the patient is in the treatment position, for optimum treatment delivery. Moving tumors are difficult to image for planning purposes and difficult to target for radiation delivery. Elekta Synergy's Active Breathing Coordinator technology, for respiratory gating, helps to treat moving targets, such as those in the lung. By pausing the patients breathing at a precisely indicated tidal volume and coordinating radiation delivery with this pause, Active Breathing Coordinator technology may allow clinicians to treat moving lung tumors with reduced margin.

Our IGRT capability with the combination of the Philips Brilliance Big Bore CT Simulator and the Elekta Synergy S Linear Accelerator puts New York Hospital Queens at the cutting edge of Radiation Therapy Technology. Our dedicated and talented team of Physicians, Physicists, Technologists, Nurses, and Secretaries, under the leadership of Dattatreyudu Nori, M.D., F.A.C.R., F.A.C.R.O., are committed to effectively using this new and exciting technology to minimize the radiation toxicity to normal structures and to deliver a tumoricidal X-ray dose to cancer targets, with the goal of improving long-term survival with improved quality of life for the patient.

Margaret Chen, M.D.

Margaret Chen, M.D.

Assistant Director,

The Breast Center, New York Hospital Queens

Margaret Chen, M.D., joins Susan Lee, M.D. and Karen Karsif, M.D., Director, as a third Attending Breast Surgeon working at New York Hospital Queens' Breast Center. Dr. Chen was an undergraduate at the University of Toronto, where she also received her medical degree. She completed a General Surgery Residency, with additional training in Breast Surgery and Oncology at McGill University.

Before coming to New York Hospital Queens, Dr. Chen was an Attending Breast Surgeon at the Solomon Katz Breast Center of the Sound Shore Medical Center of Westchester. She was also an Associate Professor of Surgery at St. George's University and an Assistant Professor of Surgery at New York Medical College.

Dr. Chen speaks Mandarin, Shanghai Dialect, and some Cantonese.

Hyesook Chang, M.D., Ph.D.

Attending Radiation Oncologist,

New York Hospital Queens

Hyesook Chang, M.D., Ph.D. has recently joined the Department of Radiation Oncology, chaired by Dattatreyudu Nori, M.D. Dr. Chang received her B.S. degree from Seoul National University in Seoul, Korea, where she also received her medical degree. In addition, she also received a Ph.D. from the Yonsei University College of Medicine in Seoul. Dr. Chang completed her residency in Radiation Oncology at Thomas Jefferson University Hospital in Philadelphia.

Before coming to New York Hospital Queens, Dr. Chang was an Attending Radiation Oncologist at the State University of New York (SUNY) Upstate University Hospital in Syracuse and at United Health Services Hospital. Dr. Chang has many years of experience as a Radiation Oncologist, including positions as the Chairperson of the Department of Radiation Oncology at Asan Medical Center in Seoul, and as an Attending Radiation Oncologist at Tufts New England Medical Center in Boston. She has had several academic appointments, including Professor in the Department of Radiation Oncology at the college of Medicine of Ulsan University in Seoul and Clinical Associate Professor at the SUNY Upstate Medical School. She is currently an Associate Professor of Radiology at Weill Medical College of Cornell University.

Dr. Chang has been an author to over 100 publications. She has been a member of numerous professional organizations, including the Korean Association for Radiation Protection, for which she served as Vice President, the Radiation Research Society, the American Society of Clinical Oncology and the American Society for Therapeutic Radiology and Oncology.

Dr. Chang speaks Korean.

Hyesook Chang, M.D., Ph.D.

Nandanuri M.S. Reddy, Ph.D.

Nandanuri M.S. Reddy, Ph.D.

Nandanuri Reddy, Ph.D., is a Senior Medical Physicist in the Department of Radiation Oncology at New York Hospital Queens. Dr. Reddy received his Ph.D. in Biophysics from Gujarat University in Ahmedabad, India.

Dr. Reddy has been a Senior Medical Physicist at New York Hospital Queens since 1992. Before coming to New York Hospital Queens Dr. Reddy was a Physicist in Radiation Oncology at Long Island College Hospital and before that, an Assistant Professor in the Department of Radiation Oncology at the SUNY Health Science Center in Brooklyn.

In addition to authoring many articles, Dr. Reddy is a Reviewer for the International Journal of Radiation Biology, the Indian Journal of Experimental Biology, the International Journal of Radiation Oncology Biology and Physics and Radiation Research. He has presented at many national and international professional conferences.

Dr. Reddy is a member of the American Society for Therapeutic Radiology and Oncology and the American Association of Physicists in Medicine.

Subroto Paul, M.D.

Subroto Paul, M.D.

Attending Thoracic Surgeon, **New York Hospital Queens**

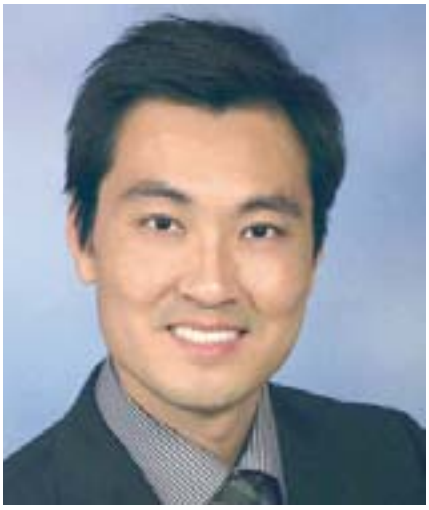
Subroto Paul, M.D., has joined Paul Lee, M.D., Director of Thoracic Surgery as a new attending in Thoracic Surgery at New York Hospital Queens. Dr. Paul received his undergraduate education from Yale University. He then earned his medical school degree from Harvard Medical School. He subsequently stayed in Boston to complete both his general and thoracic surgery residencies at Brigham and Women's Hospital, a Harvard Medical School affiliate.

Dr. Paul is an Assistant Professor of Cardiothoracic Surgery and an Attending Surgeon in the Division of Thoracic Surgery at the NewYork-Presbyterian Weill Cornell Medical Center.

Dr. Paul has received many honors, including the Harold Lamport Biomedical Research Prize at Harvard Medical School, the Francis D. Moore, M.D. Award from Brigham and Women's Hospital, and the American Association of Thoracic Surgery (AATS) Resident Traveling Fellowship.

Dr. Paul has published more than twenty peer-reviewed articles in the fields of molecular oncology, cellular receptors and thoracic surgery. Dr. Paul is interested in the treatment of lung and esophageal cancers, as well as in the treatment of pleural-based diseases, including mesothelioma.

Dr. Paul is fluent in Bengali and can understand and communicate in Spanish and Hindi.



Ji H. Han, M.D.

Ji H. Han, M.D.

Director, Pain Management,
Queens Medical Associates Center for Interventional Pain Management

Ji H. Han, M.D., has joined Queens Medical Associates and Barry Kaplan, M.D., Director, Medical Oncology at New York Hospital Queens, as Director of Queens Medical Associates Center for Interventional Pain Management. Dr. Han received his Medical Degree from the University of Alabama.

Prior to joining the faculty at Queens Medical Associates, Dr. Han completed the NewYork-Presbyterian Hospital Tri-Institutional Pain Fellowship Program which included training at Memorial Sloan-Kettering Cancer Center, NewYork-Presbyterian Hospital Weill Cornell Medical Center and the Hospital for Special Surgery.

Dr. Han is Board Certified by the American Board of Anesthesiology, and completed his residency in Anesthesiology at NewYork-Presbyterian Hospital at the Weill Cornell campus.

Dr. Han believes in providing comprehensive care to his patients and his practice is devoted to treating patients with acute and chronic cancer pain, spinal pain and neuropathic pain. Integral to his practice is the pursuit of leading-edge pain management techniques, including spinal cord stimulation, intrathecal pain therapies, radiofrequency neurolysis, percutaneous disc decompression and kyphoplasty.

Dr. Han also performs epidural steroid injections, facet joint injections and peripheral injections where appropriate. Each treatment plan is tailored to meet individual patient needs, utilizing the most up-to-date research. A comprehensive care plan is provided and reviewed with each patient. Dr. Han emphasizes the use of non-narcotic techniques where appropriate.

Dr. Han has lectured on a variety of pain topics related to spine disorders and medication management. He is a member of the American Pain Society and the Interventional Spinal Injection Society.

Dr. Han speaks Korean.

New Smoking Cessation Program at New York Hospital Queens

Patients who want to quit smoking and who want to improve their quality of life by kicking the habit have a new option at New York Hospital Queens. The American Lung Association and New York Hospital Queens are now offering the Freedom From Smoking® group program at NYHQ. The program offers the kind of support and skills needed to quit smoking for good. Specially trained Freedom From Smoking facilitators use a positive behavior change approach that shows participants how to become non-smokers while even having fun with their group as they do so. To take part in this amazing new program, to get information on upcoming program dates or to inquire about the program, please call one of the Facilitators at 718-670-1211.

Recent Events

Barry Kaplan, M.D., Director, Medical Oncology reviewed the proceedings at the recent ASCO meeting for a large multidisciplinary dinner meeting in June at Café on the Green. He continues his lecture series to the medical house staff in hematology and oncology.

Queens Medical Associates, of which Dr. Kaplan is the President, has started several new services. It now has a Center for Genetic Counseling, a Center for Nutritional Management and a Center for Interventional Pain Management (see article in this issue on Dr. Han). The staff at Queens Medical Associates has participated in several community events recently, including National Cancer Survivors Week and the Relay for Life.

The Department of Radiation Oncology recently received a full three-year reaccreditation from the American College of Radiation Oncology.

The Department of Pathology has three new pathologists; **Shah M. Giashuddin, M.D., Eric B. Gorman, M.D.,** and **Daniel Schwartz, M.D.** Dr. Giashuddin comes to New York Hospital Queens after completing a fellowship in cytopathology at Virginia Commonwealth University Medical Center and a fellowship in surgical pathology at New York University Medical Center.

Dr. Gorman comes from Montefiore Medical Center in the Bronx, where he was a fellow in hematopathology. He received his medical degree from the University of Texas Southwestern Medical School in Dallas in 2001.

Dr. Schwartz was most recently at Lincoln Medical and Mental Health Center in the Bronx, where he served as Associate Chief of Pathology for the past two years. He comes to us with over 28 years of experience in surgical pathology, hepatic and gastrointestinal pathology, cytology, autopsy and biomedical informatics. He received his medical degree from Baylor College of Medicine in Houston.

Cancer Center Clinical Program Leadership

Director
Dattatreyudu Nori, M.D., F.A.C.R., F.A.C.R.O. 670-1501

Breast Center
Karen Karsif, M.D. 670-1185
Susan Lee, M.D.
Margaret Chen, M.D.

Colorectal Surgery
Howard Tiszenkel, M.D. 445-0220

Gastrointestinal, Medical
Robert Harooni, M.D. 670-2559
Michel Nussbaum, M.D.

Gastrointestinal, Surgical
Kenneth Rifkind, M.D. 445-0220

Gynecologic Oncology
Marie Welshinger, M.D. 670-1170
Manolis Tsatsas, M.D.

Head and Neck Oncology
Jerry Huo, M.D. 670-0006

Medical Oncology
Barry Kaplan, M.D., Ph.D. 460-2300

Neurosurgery
Jaime Nieto, M.D. 670-1837

Pulmonary Medicine
Stephen Karbowitz, M.D. 670-1405

Radiation Oncology
Dattatreyudu Nori, M.D. 670-1501

Radiology
William Wolff, M.D. 670-1594

Surgical Oncology
Simon Fink, M.D. 670-1120

Surgical Pathology
Michael Warhol, M.D. 670-1141
Stanley Kerpel, D.D.S. 670-1520
(Oral Pathology)

Thoracic Surgery
Paul Lee, M.D. 670-2707
Subroto Paul, M.D.

Urology
Albert Tarasuk, M.D. 353-3710

Genetic Counseling
Brenda Zak 670-2110

Nutrition
Jack Pasquale, M.D. 465-0041
Mary Grace Sucholet, R.D. 670-2550

Pain Management
Peter Silverberg, M.D. 670-1080
Vikas Varma, M.D. 460-1111
Ji Han, M.D. 460-2300
Margaret Cawley, R.N. 670-1422

Social Service
Marlene Smike 670-1300

Cancer Research
Engracio Cortes, M.D. 279-9101
Brij M. Sood, M.D. 670-1501
Chu-Cheng Kan, Ph.D. 670-1724

Administration
Maureen Buglino, R.N., M.P.H. 670-1981
Vice President, Ambulatory Services
Tom Deutsch, M.P.H., M.B.A., 670-1501
Administrative Director
Vijaya Malladi, C.T.R., *Manager* 670-1379

Tumor Boards/Patient Care Conferences

The **Department of Radiation Oncology** has **New Patient Conferences** every Tuesday morning at 8 a.m.

Breast Tumor Board is held on the second and fourth Wednesday of every month from 12 p.m. to 1 p.m. Lunch is served. Some upcoming dates are October 10 and October 17.

Thoracic Tumor Board is on the third Wednesday of every month from 9 a.m. to 10 a.m. An upcoming date is October 17.

Gyn Tumor Board is held on the first Wednesday of every month from 8 a.m. to 9 a.m. An upcoming date is November 7.

General Tumor Board is held every Tuesday from 4 p.m. to 5 p.m. There is one Continuing Medical Education(CME) credit awarded per each Tumor Board meeting attended.

All the above noted professional educational programs are held in the **Anerena M. Anextis Conference Room** in the **Department of Radiation Oncology**. Refreshments are served.

Patient Support Groups

The American Cancer Society sponsors a **"Man-to-Man"** program for **prostate cancer** patients, which is held on the second Wednesday of every month from 6 p.m. to 7:30 p.m.

The American Cancer Society sponsors a **"Look Good-Feel Better"** program for **female cancer patients undergoing Chemotherapy and Radiation Therapy** on the second Monday of every month from 5:30 p.m. to 6:30 p.m.

The above two programs are held in the Anerena M. Anextis Conference Room in the Department of Radiation Oncology at NYHQ. To register, please call 1-800-ACS-2345.

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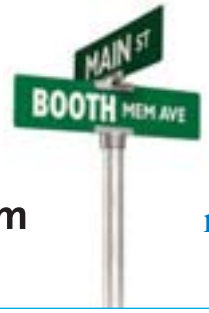

50 YEARS
1957-2007

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