Cancer Center

Beth Israel Deaconess Medical Center

HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

Leon V. & Marilyn L. Rosenberg Clinical Cancer Center

2016 Annual Report




From Standard of Care to Standard of Cure

I am pleased to share with you the Annual Report for the Cancer Center at Beth Israel Deaconess Medical Center. As you will see in the following pages, a variety of clinical, academic and research activities have kept our faculty and staff very busy. Some highlights were the growth of our community care network, the opening of our renovated Linsey BreastCare Center in Boston and the dramatic impact of an experimental personalized cancer vaccine on a lethal form of leukemia.

These accomplishments are very exciting and demonstrate our Cancer Center's great momentum as we move into the future. I congratulate all of the talented individuals who have helped to make them happen.

As you read this report, which provides the many details about the activity of the BIDMC Cancer Center throughout 2016, I hope you are able to recognize the one, true purpose that we share and that unifies us. Our physicians, our researchers, our receptionists, our surgeons, our nurses, our dietary workers, our program managers and everyone in between are all dedicated to a single goal.

We want to cure cancer.

We want to cure cancer for the individual, and we want to cure cancer for humanity.

We are proud to deliver to our patients the most effective treatments that, at this moment in time, represent the standard of care. But this is not enough. We are determined to move beyond the standard of care toward the standard of cure. We invite you to follow our progress and join us in our journey.

Pier Paolo Pandolfi, MD, PhD
Director, Cancer Center and Cancer Research Institute

2016 Annual Report

The Leon V. & Marilyn L. Rosenberg Clinical Cancer Center at Beth Israel Deaconess Medical Center is pleased to share its cancer program with you. This report is prepared annually to inform our communities about new developments in our cancer care, research and clinical trials, and the advances of our faculty and staff.

The data in this report was collected by the BIDMC Cancer Registry to fulfill requirements of the Massachusetts state cancer registry and the American College of Surgeons Commission on Cancer.

BIDMC Cancer Registry

The Cancer Registry is part of the hospital's Health Information Management Department (HIM). The HIM Director is Gerry Abrahamian, RHIT, and the manager of the Cancer Registry is Matthew Cadorette, CTR. The registry is staffed by certified tumor registrars.

Contents

Cancer Care Committee Report

Beth Israel Deaconess Medical Center (BIDMC) in Boston, Massachusetts, is a major teaching hospital of Harvard Medical School and offers an individualized, multi-disciplinary approach to the diagnosis, treatment and supportive care of patients with cancer.

The Cancer Center at Beth Israel Deaconess Medical Center provides specialized patient care for complex cancers. The Cancer Center is committed to meeting the highest standards in individualized patient care, continuing physician education and research. Comprehensive clinical services are available at BIDMC in Boston, and additional services are available in the community through a variety of affiliations with member and independent community hospitals. BIDMC, a founding member of the Dana-Farber/Harvard Cancer Center, is active in the full spectrum of basic research, translational research and clinical trials.

2016 Achievements

- Standard 1.5 Programmatic and Clinical:
  - Programmatic: Started work on quality metrics for cancer care at BIDMC and BID–Needham: to ensure that practices are standardized in pathology, imaging, clinical care and other areas responsible for cancer diagnosis
  - Clinical: Began process to determine possible locations for two conference rooms, one on East Campus and one on West Campus, dedicated to videoconferencing for discussion of cancer cases by multi-disciplinary teams
  - Clinical and Programmatic: Completed renovation of the BreastCare Center, improving patient experience
  - Clinical: Implemented Rapid Quality Reporting System (RQRS)
  - Clinical: Monitored and supported the network cancer programs
- Standard 3.1 Patient Navigation Process: A patient navigation process, driven by a community needs assessment, has been established to address health care disparities and barriers to care for patients. A full-time nurse navigator was recruited to work in the BreastCare Center with the Chinese and Spanish speaking patient navigators to meet the needs of all breast cancer patients.
- Standard 3.2 Psychosocial distress screening: A process to integrate and monitor on-site psychosocial distress screening and referral for the provision of psychosocial care was developed and implemented.
- Standard 3.3 Survivorship Care Plan: The Cancer Care Committee developed and prepared to implement a process to deliver a comprehensive care summary and follow-up plan to patients who are completing their treatment.

Goals for 2017

The Cancer Committee will continue to develop oversight and standards of care as they relate to the care of cancer patients at BIDMC. Goals include:

- Develop and implement educational tools to insure that at least 50% of all cancer patients receive a survivorship care plan

- Prepare for the Quality Oncology Practice Initiative (QOPI) in February 2017 and CoC integrated Network Cancer Program Survey at BIDMC and BID–Needham to be conducted in March 2018
- Review the process used to communicate results to care givers
- Develop and implement an assessment tool to determine appropriate social work capacity within the cancer programs throughout the network

Community Outreach Goals for 2017

- Continue the Dana-Farber/Harvard Cancer Center community outreach and education activities in minority communities.
- Display photo exhibit in March 2017. The *Faces of Faith* exhibit features photographs and inspiring quotes from cancer survivors from the faith-based Boston community, showcasing individuals living vibrant, active lives after a cancer diagnosis.

Ongoing Activities for 2017

- Implement Rapid Quality Reporting System (RQRS)
- Monitor the BIDMC academic program
- Continue to monitor the integrated network cancer program to insure consistent and best practices across the system
- Support clinical research by providing data from the BIDMC Cancer Registry
- Monitor the quality of Cancer Registry data
- Complete a site-specific cancer study with comparison survival data
- Ensure that patients and their families experience a welcoming, respectful and inclusive environment while receiving culturally responsive care

Respectfully submitted on behalf of the Cancer Care Committee,
Mary Jane Houlihan, MD, Co-Chair
Irving Kaplan, MD, Co-Chair

The Year in Numbers

In 2016, the BIDMC Cancer Registry abstracted 4,130 newly diagnosed cases and 251 non-analytic cases (recurrent cancers) for a total of 4,381. For comparison, in 2015, the registry abstracted 4,019 newly diagnosed cases and 264 non-analytic cases for a total of 4,283.

Please see figures 1-4 below for more detail about our cases in 2016:

- Figure 1: 2016 BIDMC New and Recurrent Cancer Cases
- Figure 2: Most Frequent Cancer Sites – 2016 Comparison: BIDMC to US
- Figure 3: Most Frequent Invasive Female Cancer Sites – 2016 Comparison: BIDMC to US
- Figure 4: Most Frequent Male Cancer Sites – 2016 Comparison: BIDMC to US

Figure 1: NEW AND RECURRENT CASES FOR 2016

Body System Site Group Report	NEW	%	RECURRENT	%	TOTAL
ALL SITES	**4,130**		**251**		**4,381**
Oral Cavity & Pharynx	**27**	**0.7**	**1**	**0.4**	**28**
Lip	2				2
Tongue	8				8
Salivary Glands	3		1		4
Gum & Other Mouth	1				1
Nasopharynx	4				4
Tonsil	5				5
Oropharynx	3				3
Other Oral Cavity & Pharynx	1				1
Digestive System	**873**	**21.1**	**28**	**11.2**	**901**
Esophagus	45		2		47
Stomach	74		4		78
Small Intestine	33		1		34
Colon Excluding Rectum	161		7		168
Rectum & Rectosigmoid	101		3		104
Anus, Anal Canal & Anorectum	30		1		31
Liver & Intrahepatic Bile Duct	149		6		155
Gallbladder	9		1		10
Other Biliary	35				35
Pancreas	217		3		220
Retroperitoneum	3				3
Peritoneum, Omentum & Mesentery	6				6
Other Digestive Organs	10				10
Respiratory System	**398**	**9.6**	**15**	**6**	**413**
Larynx	6				6
Lung & Bronchus	390				390
Nose, Nasal Cavity & Middle Ear					
Trache, Mediastinum & Other Respiratory	2				

Body System Site Group Report	NEW	%	RECURRENT	%	TOTAL
Bones & Joints	**8**	**0.2**			**8**
Soft Tissue (Including Heart)	**37**	**0.9**			**37**
Skin (Excluding Basal & Squamous)	**265**	**6.4**	**19**	**7.6**	**284**
Melanoma-Skin	255		18		273
Other Non-Epithelial Skin	10		1		11
Breast	**751**	**18.2**	**35**	**13.9**	**786**
Female Genital System	**339**	**8.2**	**8**	**3.2**	**347**
Cervix Uteri	30		1		31
Corpus & Uterus, NOS	181		2		183
Ovary	75		2		77
Vulva	32		3		35
Vagina & Other Genital	21				21
Male Genital System	**425**	**10.3**	**51**	**20.3**	**476**
Prostate	406		49		455
Testis	14		2		16
Penis & Other Genital	5				5
Urinary System	**289**	**7**	**41**	**16.3**	**330**
Urinary Bladder	118		20		138
Kidney & Renal Pelvis	161		21		182
Ureter & Other Urinary Organs	10				10
Brain & Other Nervous System	**179**	**4.3**	**19**	**7.6**	**198**
Endocrine System	**165**	**4**	**9**	**3.6**	**174**
Thyroid	133		6		139
Other Endocrine	32		3		35
Lymphoma	**155**	**3.8**	**9**	**3.6**	**164**
Hodgkin Lymphoma	20				20
Non-Hodgkin Lymphoma	135		9		135
Myeloma	**54**	**1.3**	**5**	**2**	**59**
Leukemia	**81**	**2**	**5**	**1.9**	**86**
Lymphocytic Leukemia	21		4		25
Myeloid & Monocytic Leukemia	55		1		56
Other Leukemia	5				5
Other Bone Marrow Primaries	**39**	**0.9**	**5**	**2**	**44**
Mesothelioma	**4**	**0.1**			**5**
Kaposi Sarcoma	**4**	**0.1**	**1**	**0.4**	**5**
Other & Unspecified Primary Sites	**37**	**0.9**			**35**
TOTAL	**4,130**	**100%**	**251**	**100%**	**4,381**

NEW TOTAL = Patients at BIDMC for the diagnosis/treatment of a newly diagnosed malignancy.

RECURRENT TOTAL = Patients who have never before been diagnosed or treated at BIDMC and were first seen here in 2016 for the treatment of a recurrent tumor or for progression of disease.

PERCENTAGES may not add up to 100 due to rounding.

Figure 2:

MOST FREQUENT INVASIVE CANCER SITES 2016 COMPARISON: BIDMC TO US

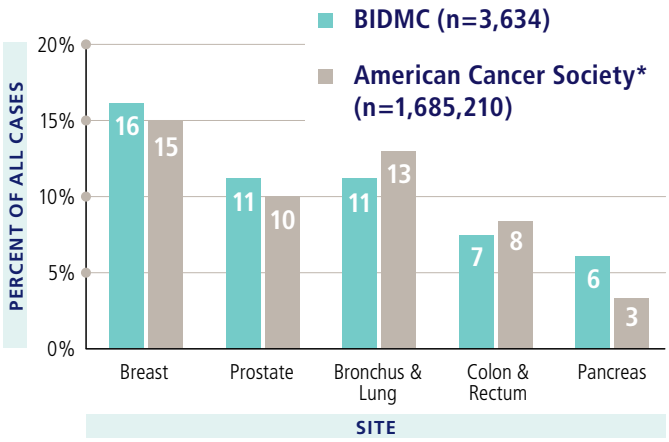


Figure 3:

MOST FREQUENT INVASIVE FEMALE CANCER SITES 2016 COMPARISON: BIDMC TO US

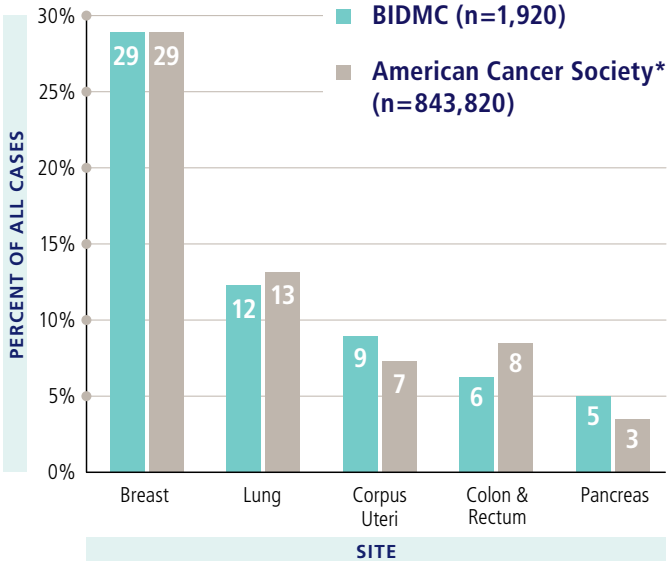
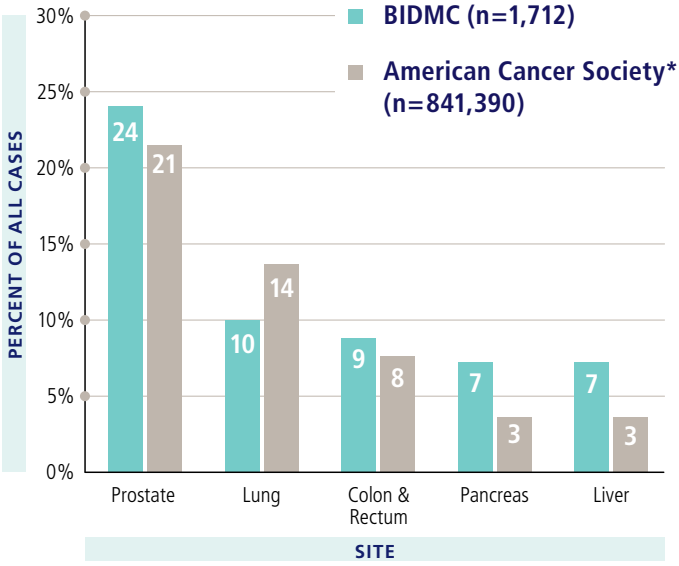


Figure 4:

MOST FREQUENT MALE CANCER SITES 2016 COMPARISON: BIDMC TO US



* *Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.*

The Year in Review

COMMUNITY NETWORK

The Cancer Center's community network includes two direct (owned) members and three that are independent, seamlessly integrated affiliates. Each community program offers multidisciplinary care where it is most convenient for patients and makes referrals to BIDMC for advanced care when needed. Tumor boards and breast conferences between affiliates and BIDMC colleagues are held regularly by videoconference, with participation by radiation oncologists, medical oncologists, cancer surgeons, oncology nursing, pathologists, radiologists and other specialists. Affiliates include:

Lank Cancer Center at Beth Israel Deaconess Hospital–Needham

Lank Cancer Center, an integral part of the BIDMC Cancer Center located at Beth Israel Deaconess Hospital–Needham, is home to advanced diagnostics and therapies, and compassionate, team-based care. Its medical staff provides highly attentive, personalized care, and consists of the same Harvard-affiliated physicians who practice at the BIDMC Cancer Center in Boston. The new, 30,000 square foot facility spans three floors and is adjacent to Beth Israel Deaconess Hospital–Needham. All cancer care services are on the first floor, including radiation treatment. Services and facilities include a radiation oncology suite with a state-of-the-art linear accelerator that delivers advanced conformal radiation therapy; advanced imaging systems; 10 chemotherapy bays, a private chemotherapy room and multiple exam rooms; and a patient-friendly environment with a healing garden and plenty of natural light.

The Beth Israel Deaconess Cancer Center in Needham was named "Lank Cancer Center" in recognition of the generosity of Althea and Buddy Lank, members of a family, who have supported BIDMC and Beth Israel Deaconess Hospital over many decades.

Cambridge Health Alliance Cancer Care

CHA oncologists are experts in the evaluation and treatment of cancer and blood disorders (hematology). They coordinate with colleagues in surgery, pathology, radiology and other disciplines and work closely with BIDMC for complex health needs. Services are available at CHA Cambridge Hospital and CHA Everett Hospital.

Cancer Center at Anna Jaques Hospital

The program, which affiliated with BIDMC in 2015, has grown substantially. To support patients, family members and care givers, a number of programs and services have been implemented including a distress screening tool, a bereavement support group and a part time social worker. Partnering with the AJH radiology department, a lung cancer screening program began in 2016. A compassionate and determined group of women created a website and centralized resources so that patients have access to integrative therapies. To alleviate stress during infusion treatments, Reiki massage and yoga are offered to patients and their significant others.

The Greene Cancer Center at Signature Healthcare

Signature Healthcare/Brockton Hospital joined the BIDMC family in 2016. The collaboration brings comprehensive cancer care to Signature Healthcare/Brockton Hospital and provides Southeast

Massachusetts patients a full range of cancer services supported by BIDMC's advanced cancer treatment strategies and research. Medical oncology including chemotherapy has been added to Signature Healthcare's existing early detection, radiation oncology, genetic counseling, social work and palliative care services. The formation of a separate Medical Oncology Division has greatly facilitated patient care. Growth has been rapid with providers evaluating over 1,000 new patients with cancers and hematologic problems in the first year of operation. Medical Oncology providers aim to provide next business day consultations for patients with a new diagnosis of cancer. All of the required services are now in place and operating in a coordinated manner in preparation for a move in the fall of 2017 to a new facility where all cancer services will be delivered under one roof.

The Jordan Hospital Club Cancer Center at BID–Plymouth

The Jordan Hospital Club Cancer Center at BID–Plymouth provides complete cancer care for all disease types. It offers a full range of community cancer services of early detection, high risk screening and diagnosis, and the latest treatment regimens in medical and radiation oncology. BID–Plymouth participates in both NCI-sponsored cancer clinical trials, through an affiliate membership with ECOG-ACRIN Cancer Research Group, and non-network group trials. In 2016, the program experienced an increase of over 700 patients diagnosed and/or treated in the cancer center and breast center. BID–Plymouth maintains a constant presence in the community, including a Cancer Survivor Day in June enjoyed by over 450 patients and families.

CLINICAL ADVANCES AND NEW SERVICES

Plastic Surgery Techniques Enhance Quality of Life

The BreastCare Center introduced a concealed-scar surgical technique that significantly minimizes visible scar tissue after mastectomy and lumpectomy. Plastic surgeons who specialize in the care of cancer patients with lymphedema also began offering surgical treatments to prevent or ease lymphedema, a condition that causes uncomfortable swelling in the arms that can result from breast surgery or radiation therapy.

Linsey BreastCare Center Opens

The Joseph M. and Thelma Linsey BreastCare Center opened at BIDMC after extensive renovation. The Center's design was developed through empirical studies and input from patients about their experiences and expectations. Studies have shown that the "patient experience" can have an impact on clinical outcomes and post-treatment quality of life, either positive or negative. To that end, the Linsey BreastCare Center comprises two floors, one for breast screening and the other for surgical consultations. With nature-themed, light-filled interiors, surgical consultation rooms offer a calm and comforting environment. The new nurse navigator acts as the point person for patients as they move through the pre-, during-, and post-treatment process. In addition, the nurse navigator works with the physicians to understand the multicultural needs of patients who come from around the world for care.

AWARDS

Mary Buss, MD, MPH, Director, Ambulatory Palliative Care Services, was chosen as the inaugural recipient of the Roger Lange Legacy Award, a one-year grant awarded to a member of the BIDMC community to support the completion of a cancer-focused project. This fund was created to honor the legacy of Roger Lange, MD, an outstanding patient-centered clinician-educator in the Division of Hematology/Oncology at BIDMC and Mount Auburn Hospital for more than 30 years.

Mark Callery, MD, Chief of General Surgery, has been named President Elect of the Boston Surgical Society, one of the oldest surgical organizations in the country. Callery is a hepatobiliary and pancreatic surgeon who has authored nearly 200 papers in peer-reviewed journals. He will become president in Dec. 2017.

J. Jacques Carter, MD, PhD, an internist at BIDMC's Health Care Associates, was presented with the Jack Colbert Memorial Award by the Massachusetts Prostate Cancer Coalition for significantly advancing the fight to conquer and cure prostate cancer through research and/or practice.

Steven Freedman, MD, PhD, Chief of the Division of Translational Research and Director of the Pancreas Center, was elected Vice Chair of the American Gastroenterological Association's (AGA) Pancreatic Disorders section. Following two years of service as the vice chair, he will become section chair. This honor recognizes Freedman's significant contributions to the AGA and the national pancreatic disease community.

Sidhu Gangadharan, MD, Chief of Thoracic Surgery and Interventional Pulmonology, was honored as the Outstanding Physician of the Year by the Philippine Medical Association (PMA) of New England. He is the first to receive this award for being a Filipino-American surgeon who has made significant contribution to the field of medicine, while inspiring many of his students, residents, fellows and colleagues in the process. PMA New England is a nonprofit organization of Filipino-American health care leaders united to develop and implement strategic charitable health care programs in local underserved communities in New England and abroad.

Ekkehard Kasper, MD, PhD, Neurosurgery, assumed several leadership roles in national societies during the past year. Kasper is serving as an executive committee member of the American Association of Neurological Surgeons (AANS)/Central Nervous System (CNS) tumor section and as scientific program officer for the 2016 AANS/CNS meeting. He is also an executive committee member of the European Association of Neurosurgical Societies and the Asian Congress of Neurosurgical Surgeons. In addition, Kasper is on the advisory board of Neurosurgical Reviews and the Asian Journal of Neurosurgery.

A. James Moser, MD, Co-Director of the BIDMC Pancreas and Liver Institute, was elected a fellow of the American Surgical Association, an academic society for surgeons with the mission of benefiting both the patient and the profession of surgery through excellence, innovation and integrity in science, education and patient care.

Lowell Schnipper, MD, Hematology/Oncology, received the Special Recognition Award from the American Society of Clinical Oncology (ASCO). Created in 1992, this award honors the achievements of an individual whose research and innovations have had a lasting effect in areas of clinical oncology,

cancer research, clinical trials, and patient advocacy activities or outstanding long-term service to ASCO and/or to clinical oncology. Schnipper, the Theodore W. and Evelyn G. Berenson Professor Emeritus at Harvard Medical School, is the former Clinical Director of the Cancer Center and Chief of the Division of Hematology/Oncology, emeritus. As the founding Chief of Oncology at Beth Israel Hospital, he and his colleagues developed a highly sought after training program focusing on clinical and translational research. With this award, ASCO is also recognizing Schnipper's research interests, which range from bench to bedside and have contributed to the understanding of the mechanism of action and resistance to antiviral and anti-neoplastic therapies, genomic instability in cancer, and most recently, quality and value in cancer care.

Ranjna Sharma, MD, was inducted as a Fellow of the American College of Surgeons. The American College of Surgeons is dedicated to enhancing surgical care for patients, while safeguarding and implementing optimal and ethical standards of care.

RESEARCH PROGRAMS

Cancer Vaccine Improves Outcomes for AML Patients

A personalized cancer vaccine markedly improved outcomes for patients suffering from acute myeloid leukemia (AML), a potentially lethal blood cancer, in a clinical trial led by investigators at the Cancer Center at BIDMC. The study published in *Science Translational Medicine* was the product of a long-term collaboration among investigators at BIDMC and Dana-Farber Cancer Institute. The vaccine stimulated powerful immune responses against AML cells and resulted in protection from relapse in a majority of patients. Despite an average age of 63, more than 70 percent of trial participants remained in remission at an average follow-up period of more than four years. The lead author of the paper was **Jacalyn Rosenblatt, MD**, Co-Director of the Cancer Vaccine Program at the BIDMC Cancer Center. The senior author was **David Avigan, MD,** Chief, Section of Hematological Malignancies and Director of the Cancer Vaccine Program.

Research Reveals the Importance of Long Non-Coding RNA Regulating Cellular Processes

Scientific research over the past decade has concentrated almost exclusively on the 2 percent of the genome's protein coding regions, virtually ignoring the other 98 percent, a vast universe of non-coding genetic material previously dismissed as nothing more than "junk." However, one type – called long non-coding RNA (lncRNA) – may be critically important for controlling cellular components in a tissue-specific manner. Long non-coding RNAs appear to be transcribed from our DNA in a similar manner to coding messenger RNAs but are not translated into proteins. While lncRNA molecules do not produce correspondingly lengthy proteins, researchers have wondered whether some of these molecules may contain segments of sequences that can code for very short proteins, or polypeptides.

Under the leadership of **Pier Paolo Pandolfi, MD, PhD,** Director of the Cancer Center and Cancer Research Institute at BIDMC, his team found that the SPAR encoding lncRNA is highly expressed in a number of tissue types, including muscle. Experiments conducted in mice demonstrated that through its effects on mTORC1, the SPAR polypeptide helps regulate the muscle's ability to regenerate and repair after injury. Specifically, expression of LINC00961 is blocked following muscle injury in mice, leading to reduced levels of SPAR and maximal mTORC1 activity to promote tissue regeneration.

The results suggest that lncRNAs may have diverse roles and functions. Although they may not code for large proteins, lncRNAs may produce small polypeptides that can fine tune the activity of critical cellular components. The findings also expand the repertoire of peptide-coding genes in the human genome that should be studied and annotated. The research was first published online in *Nature.*

Five Gene Classifier Offers Potential for Early Pancreatic Cancer Diagnosis

Manoj Bhasin, PhD, and co-senior author Towia Libermann, PhD

Pancreatic cancer, the fourth leading cause of cancer death in the United States, is often diagnosed at a late stage, when curative treatment is no longer possible. A team led by **Manoj Bhasin, PhD,** and **Towia Libermann, PhD,** Co-Director and Director of BIDMC's Genomics, Proteomics, Bioinformatics and Systems Biology Center, identified and validated an accurate five-gene classifier for discriminating early pancreatic cancer from non-malignant tissue. The investigators used a number of publicly available gene expression datasets for pancreatic cancer and developed a strategy to reanalyze these datasets together, applying rigorous statistical criteria to compare different datasets from different laboratories and different platforms with each other. The team then selected a subset of data for developing a panel for differentiating between pancreatic cancer and healthy pancreas tissue and thereafter applied this "pancreatic cancer predictor" to the remaining datasets for independent validation to confirm the accuracy of the markers. The scientists' next project is to evaluate the precise roles of the five genes and to validate the accuracy of their diagnostic assay in a prospective clinical study. "Moving forward, we will explore the potential to convert this tissue-based diagnostic into a noninvasive blood or urine test," Libermann said. He is a promising advance in the fight against this typically fatal disease.

JAX-BIDMC Partnership Targets Triple Negative Breast Cancers

The United States Army Medical Research and Materiel Command awarded $1.8 million over three years to **Edison Liu, MD,** President and CEO of The Jackson Laboratory, and **Ralph Scully, PhD,** a BIDMC cancer researcher. The grant will support studies aimed at characterizing the molecular basis of triple-negative breast cancers. The investigators hope their collaboration will result in the identification of a biomarker that can predict clinical response to cisplatin and other existing and new drugs used to treat triple-negative breast cancer and related ovarian and endometrial cancers.

Researchers Inhibit Tumor Growth in New Subtype of Lung Cancer

A team of investigators led by **Elena Levantini, PhD,** a research associate in Hematology-Oncology at BIDMC, an instructor of medicine at Harvard Medical School and a member of the Harvard Stem Cell Institute, have identified a subtype of human adenocarcinoma. The research could help determine which individuals are at greatest risk of developing lung tumors that may be amenable to a new therapy to inhibit their progression. The results – done in collaboration with the Cancer Science Institute at the National University of Singapore (CSI NUS) – were published in the journal *Science Translational Medicine.*

PROGRAMS AND PUBLICATIONS

RNAMEDICINE2016

The second annual symposium of the BIDMC Cancer Center's Institute for RNA Medicine (iRM), brought together 12 of the field's most prominent scientists for a day of illuminating presentations, provocative questions and discussion. Presentations focused on how this once-mysterious genetic material cuts across all aspects of

biomedical science and disease areas, notably cancer, but also metabolic diseases, neurological conditions and some of public health's most pressing diseases. Sequencing of the human genome made possible the discovery that non-coding RNAs are not junk, but number in the tens of thousands – and the list is not yet complete. Hosted by **Frank Slack, PhD,** iRM Director, and **Jeffrey Saffitz, MD, PhD,** Chair, Pathology, and iRM co-founder, the event also brought news that the iRM will soon be expanding beyond the walls of BIDMC to become a Harvard Medical School Initiative, which will leverage the experience and expertise of the greater Harvard community.

At RNAMEDICINE2016, Cancer Center Director and iRM co-founder Pier Paolo Pandolfi, MD, PhD, introduced his recently published work describing fusion circular RNAs, genes that can act as non-coding RNAs and serve key functions in tumorigenesis and therapy resistance. He further described the iRM's pursuit of "ultra-precision medicine," which makes use of both genomic and non-coding RNA discoveries in the pursuit of new drugs and therapies.

Symposium Speakers

NINTH ANNUAL CANCER SYMPOSIUM

"Pathways to Cure," the ninth annual Cancer Symposium at BIDMC hosted by **Pier Paolo Pandolfi, MD, PhD,** Director of the Cancer Center at BIDMC, focused on trail-blazing advances in cancer research that translate into cancer genomics and immunotherapies that can result in cures. A brief history of the development of cancer immunotherapy drugs, first approved by the FDA in 1992, provided the backdrop for other presentations and discussions. While these first immunotherapies produced a durable remission for a certain subset of patients, they were toxic and didn't work for most people. Since then, researchers have developed newer immunotherapies that are more tolerable and apply to a number of different kinds of tumors, including kidney, lung, melanoma and bladder cancers.

Urologic Robotic Surgical Training

BIDMC is one of three institutions in the United States to offer urologic robotic surgical training. The course, directed by **Andrew Wagner, MD,** with urologic surgeons **Peter Chang, MD,** and **Peter Steinberg, MD,** provides training in a unique two-day program that includes a moderated live case, didactic and hands-on instruction in the latest approaches to safe and reproducible robotic kidney, prostate and bladder surgery.

Incubator Hatches Collaborations

Physician-scientist **Rebecca Miksad, MD, MPH,** spearheaded an initiative that resulted in collaborative research proposals aimed at one of the deadliest cancers in Massachusetts: liver cancer. Dr. Miksad serves as a chair of a Dana-Farber/Harvard Cancer Center (a coalition of the Harvard teaching hospitals) Steering Committee that organized a cross-institutional Liver Cancer Grant Incubator program at which nearly 50 scientists and physicians discussed all aspects of liver cancer to "hatch ideas" for grant proposals. As a result, a number of novel proposals and collaborations emerged.

First Textbook on Tumor Treating Fields for Brain Cancer

Director of the Neuro-Oncology Unit and Co-Director of the Brain Tumor Program, **Eric T. Wong, MD,** published the first textbook on Tumor Treating Fields in oncology, one of only two treatments (the other is stereotactic radiosurgery) that originated in neuro-oncology and is being applied to other diseases. Edited by Wong,

Alternating Electric Fields Therapy in Oncology: A Practical Guide to Clinical Applications of Tumor Treating Fields presents a new technology for the treatment of glioblastomas using electromagnetic therapy. TTFields therapy has extended median survival by five months and can stabilize a glioblastoma, a common, aggressive and difficult cancer to treat for as much as two years. There is growing evidence that TTFields may be applicable to lung, ovarian, pancreatic and other tumors.

APPOINTMENTS AND PROMOTIONS

Megan Anderson, MD, was promoted to Division Chief of Orthopaedic Oncology, Department of Orthopaedics.

Alain Charest, MSc, PhD, joined the Cancer Research Institute and the Division of Genetics at BIDMC. His research expertise and focus include genetic engineering of human cancers in mice to perform research in brain cancer with special emphasis on glioblastomas.

Daniel Costa, MD, PhD, MMSc, was appointed Medical Director of the Cancer Clinical Trials Office. In his new role, he supports the BIDMC Cancer Center and ensures innovative clinical studies are conducted in a safe and compliant manner as well as integrating clinical protocols across the BID system.

John Dalrymple, MD, Katharine Esselin, MD, and **Fong W. Liu, MD,** joined BIDMC, expanding the gynecologic surgical oncology program from two to five physicians.

The BreastCare Center at BIDMC announced appointments of **Ted James, MD,** as Chief of Breast Surgical Oncology and Co-Director with **Tejas Mehta, MD,** Chief of Breast Imaging, of the Joseph M. and Thelma Linsey Breast Care Center in Boston and at the Lank Cancer Center at BID–Needham.

Susumu Kobayashi, MD, PhD, and **Daniel Costa, MD, PhD, MMSc,** were named Co-Directors of the Lung Cancer Research Program of the Cancer Research Institute.

Wenyi Wei, MD, was named Director of the Biochemistry Program for the Cancer Center and the Cancer Research Institute. In addition, Dr. Wei is an Associate Professor of pathology at Harvard Medical School, an American Cancer Society Scholar and a Leukemia and Lymphoma Society Scholar.

Jessica Zerillo, MD, was appointed Director of Quality Healthcare for the Cancer Center where she is a medical oncologist specializing in gastrointestinal cancers. Dr. Zerillo developed an Oncology Quality Process Improvement Project (PIP) Training Program for medical staff. The participants learn to design, implement and lead quality improvement projects to solve real time problems in their oncology clinical practices.

Grateful Patient Raises Nearly $100,000 for the Cancer Center

Brain cancer patient **Tom DesFosses** presented his doctor, Eric T. Wong, MD, with a check for nearly $100,000 to support cancer research in appreciation for saving his life, more than 10 years ago, when he was first diagnosed with and treated for Primary CNS Lymphoma. "*A Reason to Ride,*" a family cycling event that included a 5K walk for the first time, is organized by DesFosses, former general manager of the General Electric plant in Lynn; his wife, Judy; and a number of dedicated friends and sponsors.

Support Services

The Cancer Center Supportive Services Program recognizes the importance of treating the whole person who has been diagnosed with cancer. A comprehensive program of support services is available to patients, family members, care givers and significant others before, during and after treatment.

- BreastCare Center Survivorship Program
- The Center for Women Cancer Survivors
- Oncology social work programs/Oncology support programs
  - Patient navigator program for Chinese, Latino and other patients
  - Interpreter services in more than 40 languages
  - Oncology support groups for:
    - Women with new diagnoses or in adjuvant treatment for breast cancer
    - Women who have completed treatment for breast cancer
    - Women who are living with metastatic cancer
    - Women with gynecological cancer
    - Patients with melanoma
    - Family members of melanoma patients
    - Patients with prostate cancer (Longwood area support group)
    - Caregivers for family members of bone marrow transplant patients
- Pain management
- Palliative Care Program/Hospice/Pastoral Care
- Physical therapy

Community Outreach

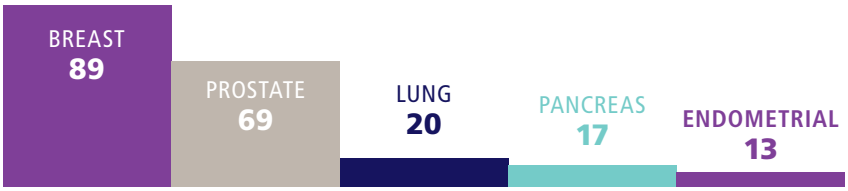
In 2016, BIDMC continued its strong commitment to increasing access to community-based cancer prevention, treatment and support services. Through six affiliated community health centers, we sponsored numerous outreach activities for neighborhood residents as well as educational forums for health center providers.

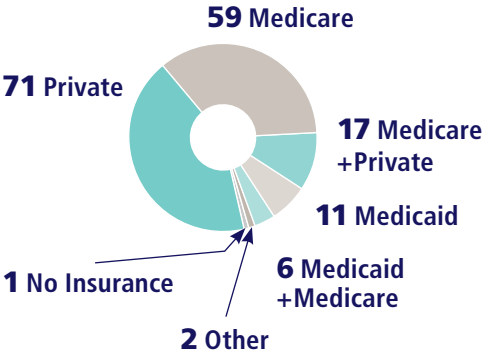
In addition, the Cancer Center conducted a full complement of programs designed to support patients in underserved communities. Many of the activities were undertaken in conjunction with the American Cancer Society (ACS).

Patient Navigator Program

The collaboration between BIDMC and the ACS has provided patient navigator services to BIDMC patients and families for more than five years and is an integral part of BIDMC's overall patient navigation program. A Chinese-speaking patient navigator has been supported by BIDMC and a Spanish-speaking navigator has been supported through an ACS grant.

The top five identified disease types served by the Patient Navigator Program are shown below. Combined, these patients made 208 requests for supportive services accounting for 44% of all requests out of a total of 494 requests for all disease types.





While 300 patients did not indicate insurance coverage type, information on 167 was obtained. Of those, only one indicated no insurance.

Patient Navigator Program

The program serves a racially and culturally diverse population. During 2016, **1,068 patients** met one-on-one with a patient navigator to connect them with programs and services.

- **2%** African American/Black
- **11%** Caucasian/White
- **56%** Chinese
- **7%** Hispanic/Latino
- **0.5%** Non-Chinese Asian
- **1%** Other
- **0.2%** Multi-Racial
- **22%** Unknown

Patients Served by Age

- **2%** 20-29 years
- **5%** 30-39 years
- **10%** 40-49 years
- **22%** 50-59 years
- **26%** 60-69 years
- **21%** 70-79 years
- **7%** 80+ years
- **7%** Unknown

In addition to helping individual patients, the navigators support a number of psychosocial programs.

- Patients are offered opportunities to participate in appropriate programs such as *Reach to Recovery*, a program that matches newly diagnosed breast cancer patients with breast cancer survivors; *Man to Man*, the prostate cancer support program; *Road to Recovery*, information about transportation and *Look Good Feel Better*, personal care workshops.
- A multicultural cancer support group organized by BIDMC is held at the Society's AstraZeneca Hope Lodge in Boston.

Psychosocial Programs

Psychosocial programs available in Spanish and Chinese include a Latina breast cancer support group held at BIDMC and *Tea Time*, a program for women in the Chinese community who are receiving treatment or are survivors of cancer.

- Information for local *Relay for Life Survivorship Celebrations* is provided via bulletin boards and through conversations with the patient navigator.
- Educational sessions were provided by five physicians from BIDMC at the 19th Annual Massachusetts Prostate Cancer Symposium.
- The brochure *Is a Clinical Trial The Right Choice For Me?* is available in waiting areas and from the patient navigator.
- Nutrition for the *Person with Cancer during Treatment: A Guide for Patients and Families* is available for patients from the patient navigator.
- *I Can Cope* nutrition information is available online, for patients/caregivers with access to the internet.
- American Cancer Society brochures in several languages are available in outpatient clinics, in Radiation Planning, in the BreastCare Center and on in-patient units.
- We continue our partnership with BIDMC's Human Subject Protection Office (HSPO) to provide a quarterly educational program titled *Truly Consenting Adults*. The interactive presentations, targeting both clinicians and researchers incorporate principles of providing health literacy and cultural/linguistic considerations in the informed consent process.

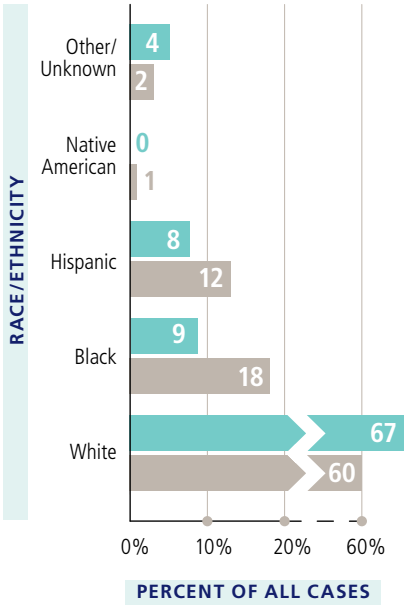
Program Outcomes

LIVER CANCER

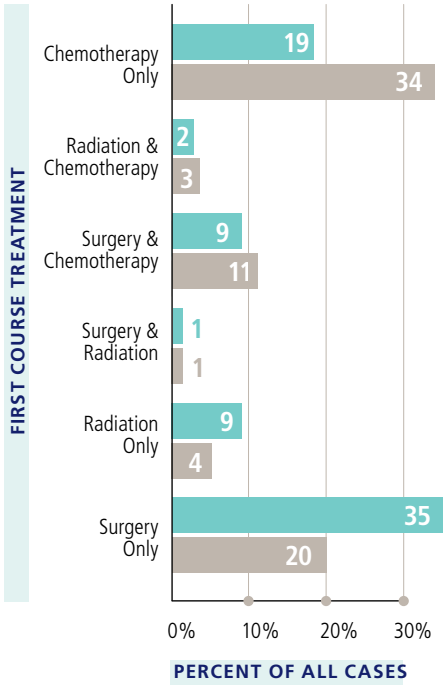
CASES DIAGNOSED BETWEEN 2009-2013

- BIDMC
- Academic Comprehensive Program Hospitals in All States Combination: Class of Case 10-14 and Class of Case 20-22 Data from 240 Hospitals

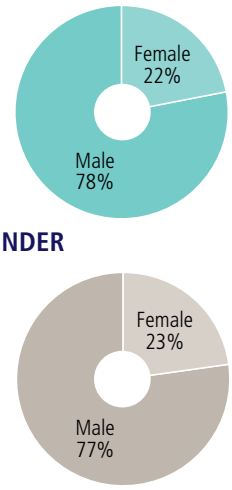
RACE/ETHNICITY



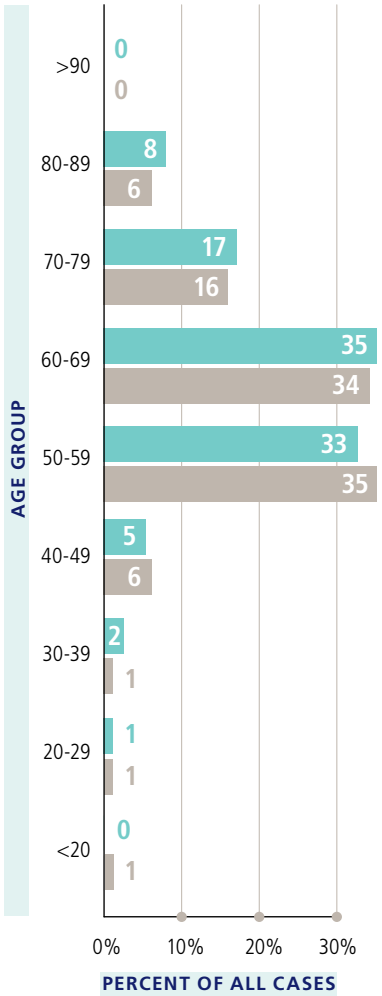
FIRST COURSE TREATMENT



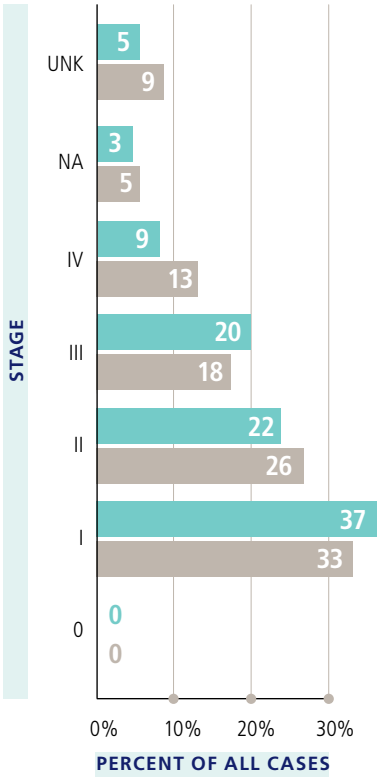
GENDER



AGE GROUP



STAGE

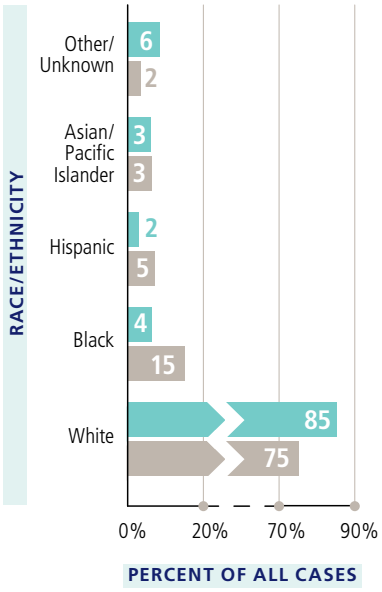


PANCREATIC CANCER

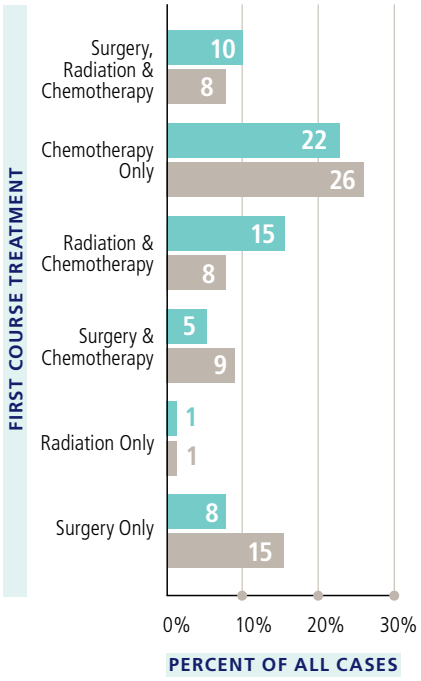
CASES DIAGNOSED BETWEEN 2009-2013

- BIDMC
- Academic Comprehensive Program Hospitals in All States Combination: Class of Case 10-14 and Class of Case 20-22 Data from 245 Hospitals

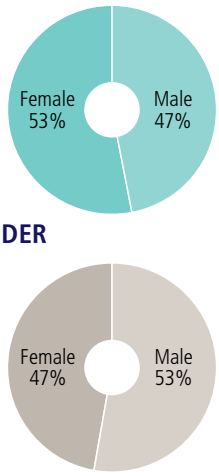
RACE/ETHNICITY



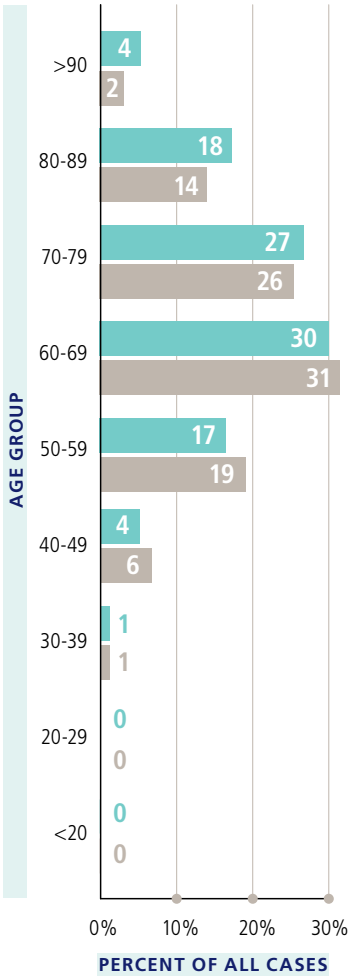
FIRST COURSE TREATMENT



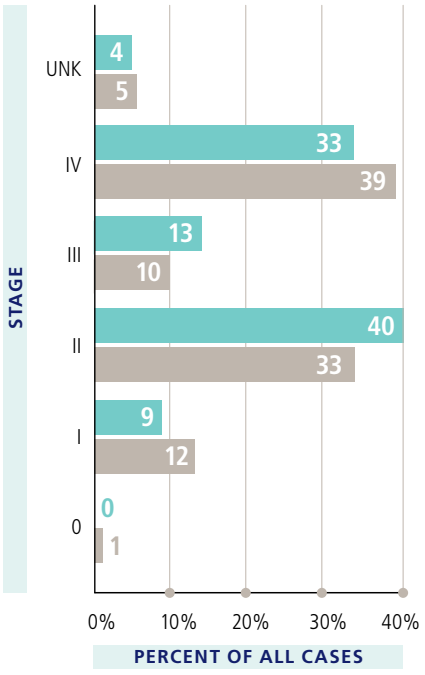
GENDER



AGE GROUP



STAGE

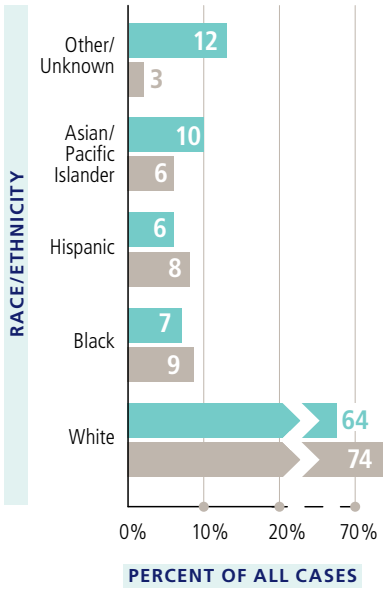


THYROID CANCER

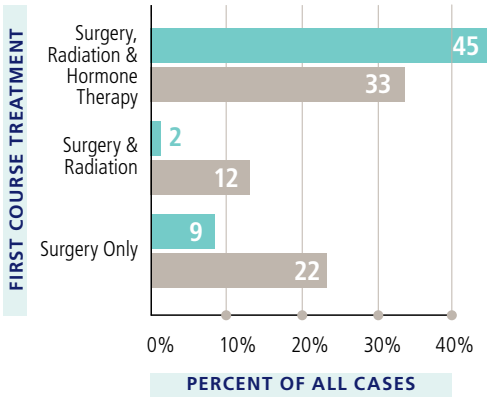
CASES DIAGNOSED BETWEEN 2009-2013

- BIDMC
- Academic Comprehensive Program Hospitals in All States Combination: Class of Case 10-14 and Class of Case 20-22 Data from 243 Hospitals

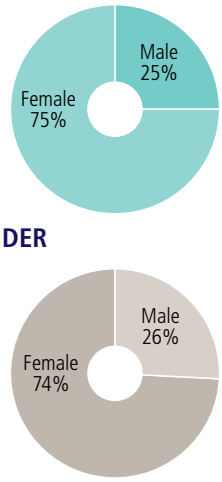
RACE/ETHNICITY



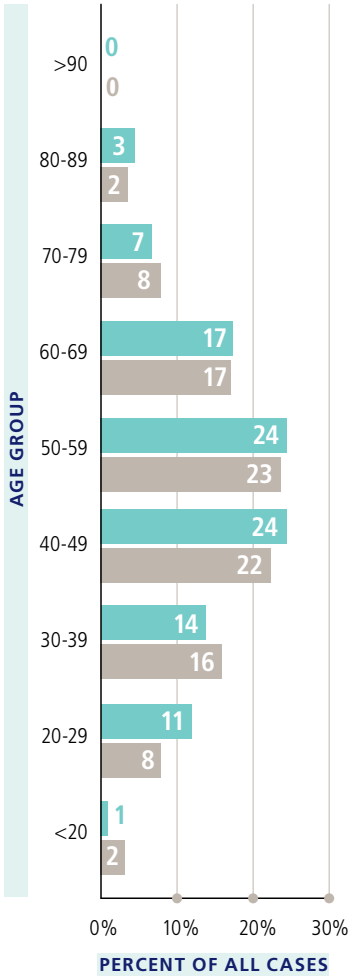
FIRST COURSE TREATMENT



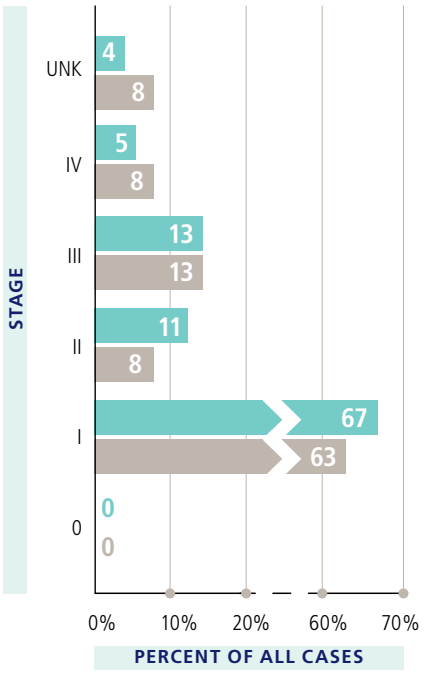
GENDER



AGE GROUP



STAGE

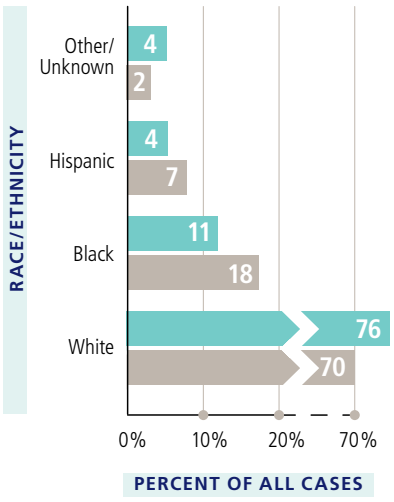


COLON CANCER

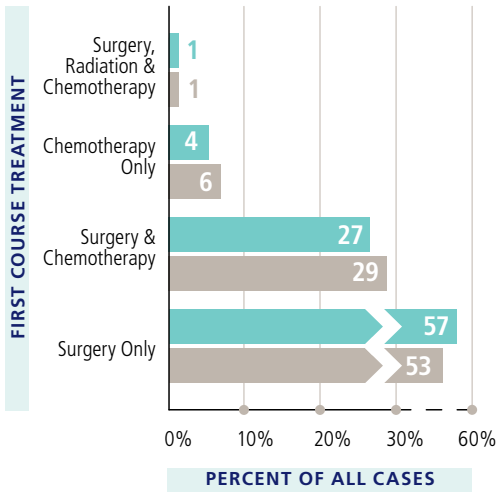
CASES DIAGNOSED BETWEEN 2009-2013

- BIDMC
- Academic Comprehensive Program Hospitals in All States Combination: Class of Case 10-14 and Class of Case 20-22 Data from 240 Hospitals

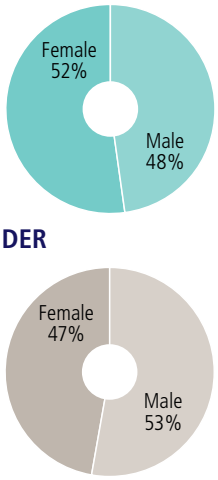
RACE/ETHNICITY



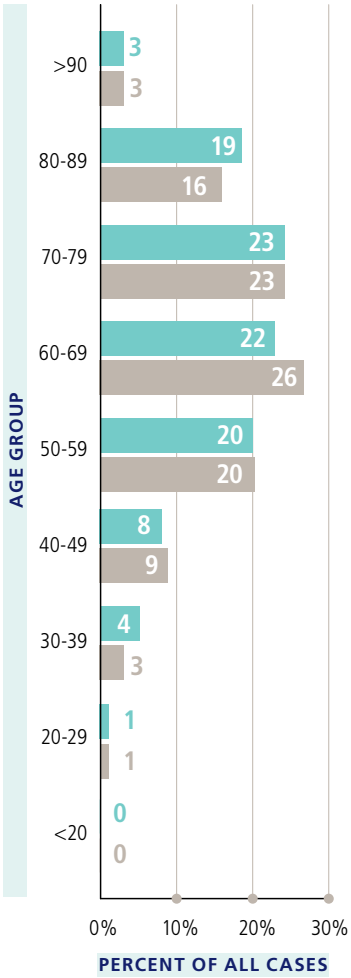
FIRST COURSE TREATMENT



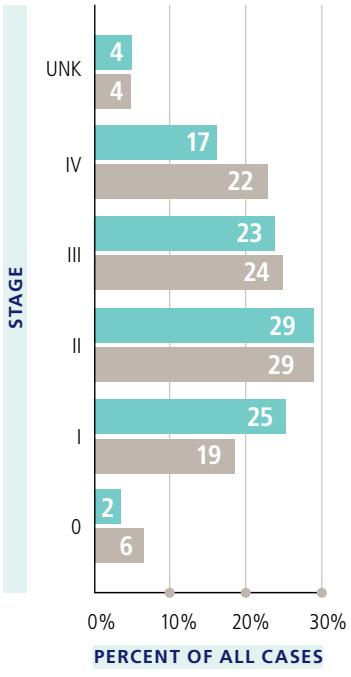
GENDER



AGE GROUP



STAGE



2016 Silverman Quality and Process Improvement

The Silverman Institute for Health Care Quality and Safety hosts an annual "Celebrating Improvement" event. The event includes a display of posters from all areas of the hospital. The posters presented here represent those directly involved in cancer care in an ongoing effort to improve quality and safety throughout the Cancer Center every day.

- A Quality Improvement Initiative to Improve Procedural Safety in Hematology/Oncology: Methods and Lessons
- Chemotherapy Teaching Initiative
- Cytogenetics is Alive and Well at BIDMC
- Getting to the Bottom of Things: Lymphatic Drainage Patterns of the Skin in Patients with Melanoma
- Hematology/Oncology: Improving Patient Flow through Simplified Scheduling
- Improving Patient Outcomes with Therapy During and After Head and Neck Cancer Treatment
- Infusion and Pheresis Scheduling Improvement
- Integrating Nursing into Oral Chemotherapy Education
- Patient Preferences and Understanding of the Breast Imager's Role in Performing and Communicating Biopsy
- Wide Excision Alone for DCIS – What is the Optimal Screening Interval After Initial Diagnosis? Are There Predictors of Recurrence?

A Quality Improvement Initiative to improve procedural safety in Hematology Oncology: Methods and Lessons

Adebayo Oshin, MPH; Jessica Zerillo, MD; James Levine, MD; Scot Sternberg, MS; Alex Carbo, MD; Stephen Cannistra, MD

Department of Medicine and Division of Hematology and Oncology, Beth Israel Deaconess Medical Center

INTRODUCTION

- During a procedure defined as **invasive** (involving puncture or incision of the skin, or the insertion of an instrument or foreign material into the body) that exposes a patient to more than a minimal risk of a significant complication, a timeout should be conducted and documented.
- The use of a pre-procedure checklist greatly helps prevent wrong site, wrong procedure and wrong person procedures and thus minimizes patient harm and distress.
- Although there are standardized steps for documenting a timeout in the outpatient clinics and inpatient areas, these were not consistently followed.

OBJECTIVES

- To identify all invasive procedures being performed in Hematology/Oncology outpatient and inpatient areas to ensure consistent, standardized documentation.
- To establish and improve patient safety during these procedures by properly conducting the pre-procedure checklist and documenting a time-out was performed.

INTERVENTION, INCLUDING CONTEXT

- The Division of Hematology and Oncology services ambulatory patients on Shapiro 9, Shapiro 7 & Stoneman 7 and inpatients on 11 Reisman, 7 Feldberg and the inpatient consult service.
- Procedures within the Division are most commonly bone marrow aspirates and biopsies, followed by lumbar punctures.
- Procedures are most commonly performed in 3 locations: the inpatient heme-malignancy service, inpatient consult service and ambulatory heme-malignancy clinic.

INTERVENTION, INCLUDING CONTEXT (CONTINUED)

- We generated a report of invasive procedures identified by billing records and reviewed with QI leaders to ensure all procedures were captured and corresponding documentation included a pre-procedure checklist.
- Billing reports were run monthly to identify invasive procedures performed in ambulatory and inpatient settings and medical record audits of documentation of a pre-procedural time-out were conducted.
- Rates were reported and reviewed by the QI Leadership.
- Our interventions included generating monthly reports of rates of documentation of procedural time-outs and having QI Leadership discussing the importance of the data with providers.
- In addition, we reminded providers of macros developed for procedural notes which included documentation of time-out and we sent individualized emails to notify any provider who did not document a time-out when performing an invasive procedure.

ASSESSING PERFORMANCE AND MEASURES OF SUCCESS

- We set a target that 100% of invasive procedures done in Hematology Oncology would have a time-out documented.
- An audit of the online medical record was performed and rates of documentation of time out were measured and tracked.

A Quality Improvement Initiative

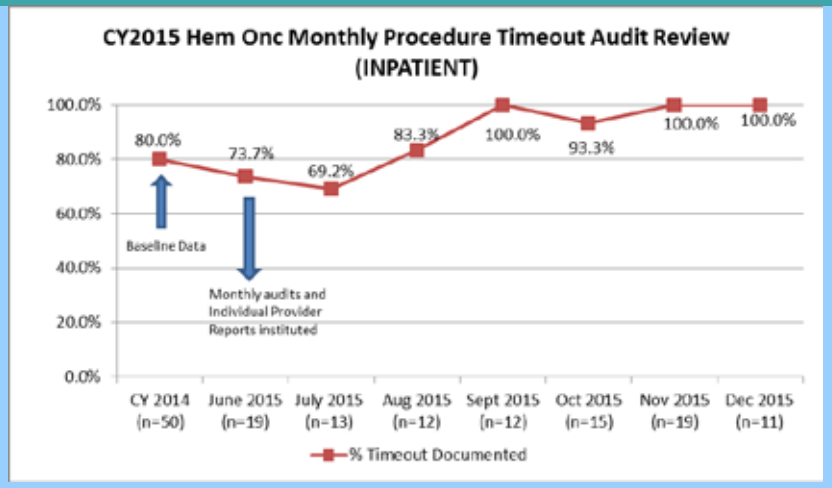
to improve procedural safety in Hematology Oncology: Methods and Lessons

Adebayo Oshin MPH; Jessica Zerillo MD; James Levine MD; Scot Sternberg MS; Alex Carbo, MD; Stephen Cannistra MD

Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

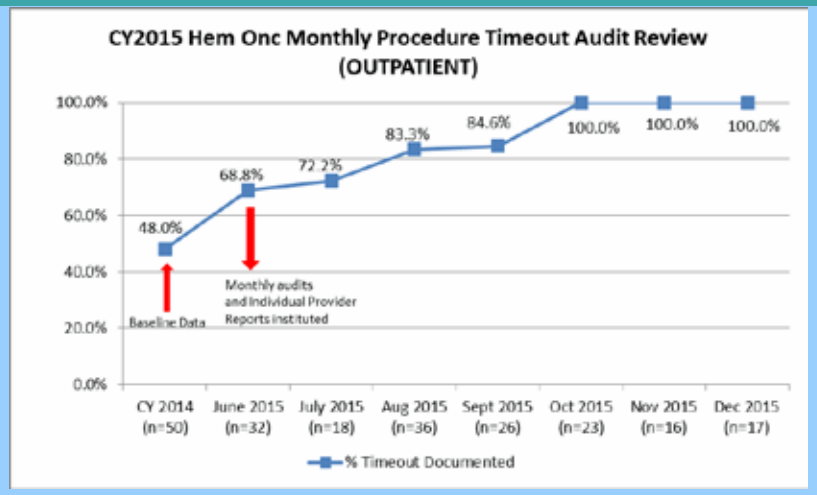
Department of Medicine and Division of Hematology and Oncology, Beth Israel Deaconess Medical Center

FINDINGS TO DATE



Footnote: In 3 out of the last 4 months of our intervention, the time-out documentation rates were sustained at 100%

FINDINGS TO DATE (CONTINUED)



Footnote: In 3 out of the last 4 months of our intervention, the time-out documentation rates were sustained at 100%

LESSONS LEARNED

- Regular reports of performance rates in conjunction with informing providers of non-compliance helped increase and sustain documentation rate over the 6 month period of review.
- The feedback received by providers via email reports served as a reminder to accurately and properly document timeouts in a timely manner in order to sustain improvements made.

NEXT STEPS

- We plan to continue tracking the documentation of procedure timeouts and providing feedback for an additional 6 months to ensure sustained improvements.

Chemotherapy Teaching Initiative

The Problem

It is well established in the nursing literature that patients benefit from an education visit prior to the first session of chemotherapy; it helps decrease patient anxiety, improves patient understanding, eases time constraints during their first chemotherapy, and overall increases nurse and patient satisfaction. When the BIDMC Cancer Center Needham opened in February, 2015, we were not offering these educational visits. We quickly found that the patients were exceedingly anxious and overwhelmed when they commenced treatment; patients did not have necessary pre-medications, or proper vein assessment both of which resulted in treatment delays.

Aim/Goal

The goals of the teaching visit are to (1) increase patient knowledge and thus, decrease patient anxiety; (2) identify barriers to care and set up necessary multidisciplinary services from which the patient may benefit; (3) ensure preparatory and supportive medications are authorized and obtained; (4) Confirm safe peripheral veins or venous access device in place or set up.

We initiated these visits in March, 2015 and collected data through December, 2015.

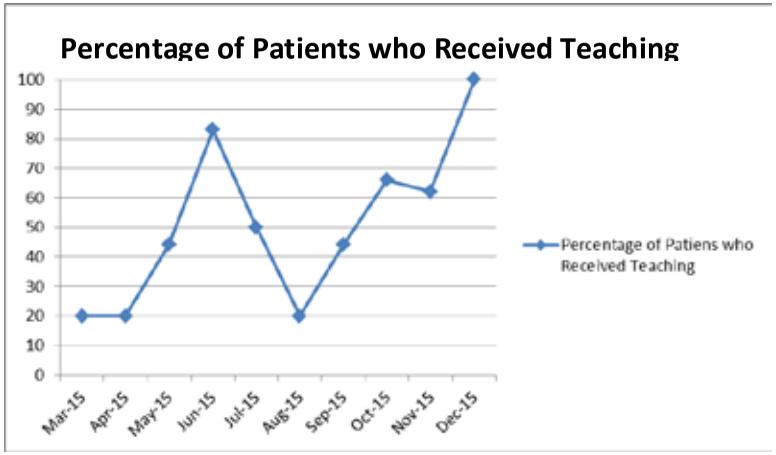
The Team

- Robb Friedman, MD, Medical Director, Cancer Center Needham
- Beth Hammerstrand, NP, Nurse Practitioner
- Linda Yanes, RN, BIDMC, Nurse Coordinator
- In collaboration with the Beth Israel Deaconess Medical Center, Cancer Center Needham infusion nurses.

The Interventions

Every new patient to the BIDMC Cancer Center Needham who commences with new chemotherapy will have a joint RN/NP teaching visit to occur at a separate time from an MD visit and prior to the first infusion visit.

The Results/Progress to Date



Lessons Learned

- Necessary for physician support to allow nurse schedules to accommodate the teaching visits
- Patients are willing to come for this appointment if the teaching visit is presented as an expected part of the treatment. Patients endorse great value in the visit
- It reiterates the multidisciplinary team approach for patients

Next Steps

- Continue to implement teaching visits with a goal of 100% of patients to receive an education session, including those patients referred from Boston
- Standardize scheduling templates to include teaching visit as a mandatory visit prior to chemotherapy
- Standardize documentation of educational visits as the Cancer Center grows and more nurses are involved in visits
- Implement RN alone teaching sessions as the clinic volume grows and more providers see patients in Needham
- Consider patient, or nurse satisfaction survey for validation

For more information, contact:
Elizabeth Hammerstrand, NP
ehammers@.bidmc.harvard.edu

Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | The Silverman Institute For Health Care Quality and Safety

Cytogenetics is Alive and Well at BIDMC

Jennifer Otani-Rosa, CG(ASCP), Tammy Galloway, MT(ASCP), Christine Bryke, MD Lynne Uhl, MD, Judith Jensen, Gina McCormick, MT(ASCP), Karen Eichelberger, MT(ASCP), Lisa Donovan, Min Zhang, CG(ASCP), Jeannine Pandozzi, CG(ASCP), Nandini Basavappa, Pamela Daily, CG(ASCP), Nancy Hsu, CG(ASCP), Zi Wang, CG(ASCP), Andrew McCoy, CG(ASCP), Jennifer McFalls, Yigu Chen, MPH.

Background

The Cytogenetics Laboratory was closed in June of 2013. Chromosome analysis and FISH testing had to be sent out to a reference laboratory creating challenges for both laboratory staff and clinicians.

Problems that existed during this time included:

- Interruption of the close communication between Heme/Onc, HemePath, and Cytogenetics necessary for optimal oncology patient care. Consultation regarding an unusual result, additional testing, or management of an unusual specimen is often not easily accomplished when dealing with a large reference lab.
- Increased turnaround times due to referral to the reference laboratory.
- Loss of an in-house Cytogenetics rotation for Pathology residents and fellows.

Goal

Reopen and expand the services of the Cytogenetics Laboratory as soon as possible, to provide prompt, accurate cytogenetic test results needed for patient care decisions.

The Interventions

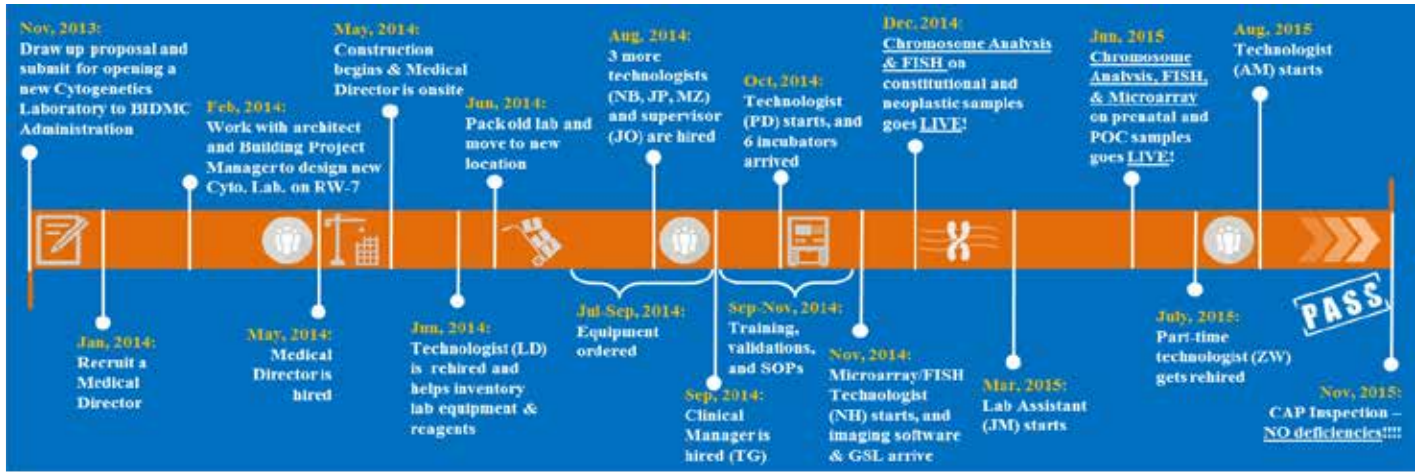
- Obtained approval and support of BIDMC administration to open an expanded full service Cytogenetics laboratory.
- Renovated space in the Research West building for the new Cytogenetics laboratory.
- Recruited highly skilled cytogenetic technologists in chromosome analysis, FISH, microarray, and tissue culture.
- Inventoried and moved existing usable equipment into the new location.
- Selected and purchased new equipment and supplies.
- Adapted existing AP SoftPath laboratory information system for use by Cytogenetics.
- Performed validation studies for tissue culture, chromosome analysis, microarray and 84 FISH probe sets.
- Wrote 20 all new standard operating procedures by selecting and combining the best components, methods, and most efficient steps from several Cytogenetics laboratories to maximize quality and minimize cost.
- Trained and assessed competency of new staff.

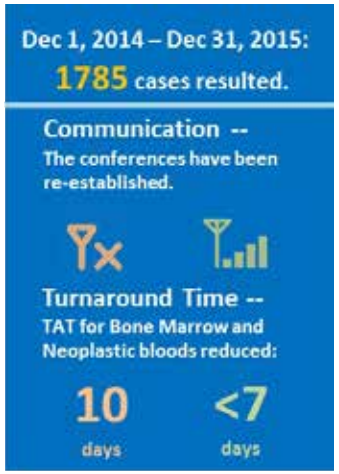
Lessons Learned

- Starting from scratch was a huge endeavor
- Providers' preference to do all ordering via POE/webOMR and do not want to use manual paper requisitions.

Next Steps

- Work with LIS/IS to prioritize the addition of Cytogenetics orders to the webOMR and POE systems.
- Explore offering Cytogenetics testing beyond BIDMC.
- Continue to optimize procedures to improve efficiencies and reduce costs where possible.





Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | THE SILVERMAN INSTITUTE For Health Care Quality and Safety

For more information, contact:
Tammy Galloway, MT (ASCP), Clinical Manager
tgallowa@bidmc.harvard.edu

Getting to the Bottom of Things: Lymphatic Drainage Patterns of the Skin in Patients with Melanoma

George J. Watts, Quang Nguyen, Elisa Franquet, Kevin J. Donohoe

Department of Radiology, Beth Israel Deaconess Medical School • Harvard Medical School, Boston, MA

Beth Israel Deaconess Medical Center | Harvard Medical School Teaching Hospital

INTRODUCTION

- Approximately 40,000 new cases of cutaneous melanoma annually (~7,300 US).
- Melanoma first disseminates in an orderly progression through lymphatic channels to the regional lymph nodes.
- **Regional lymph node metastatic involvement is the single most important prognostic factor**, lowering the 5-year survival rate to approximately 50%.
- **Lymphoscintigraphy has proved reliable in demonstrating variability in cutaneous lymphatic flow and identifying the unique drainage pattern**.

TRACERS

An Ideal Tracer should:

- Have rapid clearance from the interstitial space into the lymphatic system
- Produce high-quality images and deliver a low radiation dose to the patient.
- Small particles (<100 nm diameter) to clear the interstitial space and enter the lymphatic channels and regional nodes
- Tracers: 99mTc filtered sulfur colloid (US), 99mTc human serum albumin (Europe), 99mTc antimony trisulfide colloid (Australia, Europe, Canada), 99mTc Tilmanocept (US)

PROTOCOL

INJECTION

- Intradermal (not subdermal) radiotracer injection is recommended.
- A 25-27-G needle, as tangentially as possible to the skin surface.
- ≤ 0.2 mL volume is recommended to avoid collapsing the lymphatic channels.
- 0.1–0.2 mL of air is left behind the radiocolloid.
- Avoid contamination of the skin.
- Total injected activity ranges from 200 to 1000 μ Ci, divided into aliquots of 100–250 μ Ci, in a volume of 0.1–0.5 mL (20).
- 2- 8 separate injections may be necessary, depending on the excision scar size and are. Avoid inflamed, infected, or scarred areas.
- Inject 0.5–1.0 cm from the scar or tumor margin.

IMAGING

- Planar images including the area of injection and regional lymph node basin.
- Initial large field-of-view (FOV) detector to include injection site to assess for possible field contamination.
- Dynamic phase imaging with static images obtained approximately every 5 min. for 45-60 minutes.
- Lateral, oblique views and SPECT/CT to facilitate lymph node visualization over injection site or superimposed lymph nodes.

Don't miss these areas!!

- **Head and neck:** lateral views for better localization. Consider SPECT/CT
- **Trunk:** include both axillae and inguinal areas in the FOV
- **Upper extremities:** Image epitrochlear region and ipsilateral supraclavicular, chest & neck base region
- **Lower extremities:** Include popliteal region; contralateral inguinal if prior inguinal surgery

REFERENCES

1. Mariani, G et. al. Atlas of Lymphoscintigraphy and Sentinel Node Mapping. Milan, Italy: Springer; 2013.
2. Harisinghani MG, ed. Atlas of Lymph Node Anatomy. New York, NY: Springer; 2013.
3. Uren, RF. Lymphatic Drainage of the Skin. Annals of Surgical Oncology. 2004; 11(3):179-185.
4. Uren RF, Howman-Giles R, et al. Patterns of Lymphatic Drainage from the Skin in Patients with Melanoma. Journal of Nuclear Medicine. 2003; 44(4):570-582.
5. Thompson JF, Uren RF, et. al. Location of Sentinel Lymph Nodes in Patients with Cutaneous Melanoma; New Insights into Lymphatic Anatomy. J Am Coll Surg. 1999; 189(2):195-206.
6. Reynolds HM, Walker CG, et. al. Functional anatomy of the lymphatics draining the skin: a detailed statistical analysis. J Anat. 2010; 2(16):344-355.
7. Carlson GW, Murray DR, et. al. Management of Malignant Melanoma of the head and Neck Using Dynamic Lymphoscintigraphy and Gamma Probe-Guided Sentinel Lymph Node Biopsy. Arch Otolaryngol Head Neck Surg. 2000; 126(3):433-437.
8. Kelly J, Fogarty K, Redmond HP. A definitive Role for Sentinel Lymph Node Mapping with Biopsy for Cutaneous Melanoma of the Head and Neck. Surgeon. 2009; 7(6):336-339.

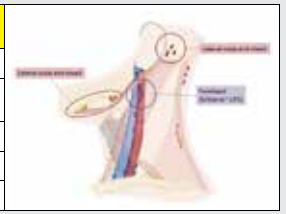
Acknowledgements: Fundacion Alfonso Martin Escudero provided grant support to EFE .

LYMPHATIC DRAINAGE

- **In-transit nodes** represent embryonic rests of lymphatic tissue found along the pathway of a lymphatic channel, occasionally seen between a tumor and the regional lymph node basin
- In-transit nodes may be the first place for tumor or radionuclide to be trapped and reflect a true "sentinel node".
- Prior studies have shown ~10-20% of in-transit nodes to have metastatic cells with a rare cases of no associated tumor involvement in the regional lymph node basin.

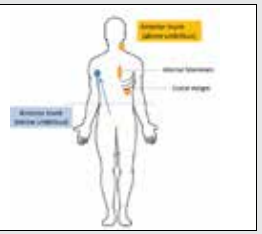
HEAD & NECK

ANATOMICAL AREA	COMMON	LESS COMMON
GENERAL INFO	Mult SNs common, often small and very near or directly under malanoma site	Approx. 33% H/N melanoma drains to discordant site
Scalp vertex and posterior	Postauricular, Supraclavicular, Level IV	5% in transit
Ear	Preaurícular (parotid) Postauricular	
Mandible	Submandibular	
Lateral Scalp & Cheek	Level II; Preaurícular (parotid)	**Postauricular; Level I**
Forehead	Preaurícular (parotid)	**Level II** >> I, III, IV. Bilateral



TRUNK

ANATOMICAL AREA	COMMON	LESS COMMON
GENERAL INFO	Contrary to classic concept, it has been shown that lymphatic drainage crosses the midline.	
Anterior (above umbilicus)	Axilla*, Supraclavicular, Inguinal	**Costal Margin, internal mammary, level V** > IV, II, II
Anterior (below umbilicus)	Inguinal*	**Axilla**
Posterior (above waistline)	Axilla*, Level V, IV>III, Inguinal	Triangular intermuscular space Paravertebral Retroperitoneal
Posterior (below waistline)	Inguinal*, Axilla	Paravertebral Retroperitoneal



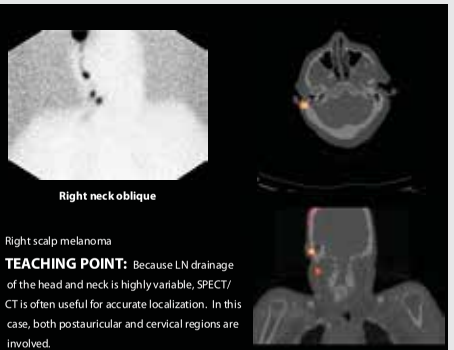
EXTREMITIES

ANATOMICAL AREA	COMMON	LESS COMMON
Upper Extremity	Upper Extremity	Upper Extremity
Fingers Palm Dorsum of hand	Axilla*	Epitrochlear, **Supraclavicular, interpectoral, lateral neck base**
Forearm Arm		
Lower Extremity	Lower Extremity	Lower Extremity
Toes Sole Dorsum of foot	Inguinal*, Popliteal	Contralateral inguinal if prior inguinal surgery
Leg Thigh	Inguinal*	

*Most frequent drainage

CASE EXAMPLES AND TEACHING POINTS

HEAD & NECK



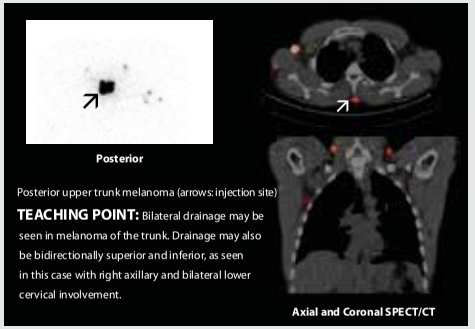
Right neck oblique

Axial and Coronal SPECT/CT

Right scalp melanoma

TEACHING POINT: Because LN drainage of the head and neck is highly variable, SPECT/CT is often useful for accurate localization. In this case, both postauricular and cervical regions are involved.

TRUNK



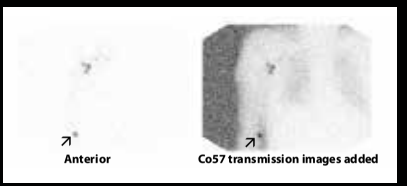
Posterior

Axial and Coronal SPECT/CT

Posterior upper trunk melanoma (arrows: injection site)

TEACHING POINT: Bilateral drainage may be seen in melanoma of the trunk. Drainage may also be bidirectionally superior and inferior, as seen in this case with right axillary and bilateral lower cervical involvement.

EXTREMITIES



Anterior

Co57 transmission images added

Sub-ungual melanoma of the right 5th finger

TEACHING POINT: Although melanomas from the distal upper extremity drain to the axilla, imaging the epitrochlear region is important in order to include possible in-transit nodes (arrows), as demonstrated in the case above.

Beth Israel Deaconess Medical Center | Harvard Medical School Teaching Hospital | The Silverman Institute for Health Care Quality and Safety

For more information, contact:
gwatts@bidmc.harvard.edu

Hematology/Oncology: Improving Patient flow through Simplified Scheduling

The Problem

The Division of Hematology Oncology identified an opportunity to transform the management of provider schedules by leveraging schedule templates in CCC. Historically, providers would spend 1-2 hours weekly reviewing the accuracy of their schedules. Schedulers would "hard book" or manually enter each visit for all appointments, coordinating a number of patient needs including the coordination of treatment visits and research visits. This created an unnecessary administrative burden as well as increased likelihood for errors. In addition, patients were being double booked with attending physicians, fellows, and nurse practitioner's causing bottlenecks in patient flow.

Aim/Goal

The Gastrointestinal & Hepatobiliary Cancer program requested to pilot an approach to design and manage schedule templates that would decrease the administrative burden, improve patient flow, and increase patient visits.

Primary Measures:

- Develop standardized appointment types and lengths for physicians, fellows, and nurse practitioners – including independent nurse practitioner visit types
- Evaluate and establish RVU and patient volume standards
  - Attending sessions: 7-8 patients / 10-11 RVU's per 4 hour session
  - Attending sessions with fellow and/or nurse practitioner: 11-12 patients / 14-15 RVU's per 4 hour session
- Reduce the number of scheduling errors by decreasing physician requested cancelations by 5% (Baseline: on average 200 requests per month for GI)
- Evaluate and establish a standard for appointment availability
- Eliminate double booking

Secondary Measures:

- Evaluate patient flow by measuring whether patient visits start on time – patients roomed within 5 minutes of scheduled appointment time.
- Increase attendance from 0% to 10-50% GI provider are able to attend Wednesday's GI Oncology conferences

The Team

- Rebecca Miksad, Physician
- Diane Savarese, Physician
- Andrea Bullock, Physician
- Benjamin Schlechter, Physician
- Jessica Zerillo, Physician
- Carol Pilgrim, Nurse Practitioner
- Lois Hartsough, Administrative Manager Clinical Operations
- Tyler Britton, Practice Coordinator
- Michelle McGrory, Nursing Director
- Kelly Noonan, Practice Manager
- Amanda Souza, Administrative Assistant
- Irene Jordan, Application Specialist - Ambulatory Systems
- Chris Rodrigues, Senior Project Manager - Office of Improvement and Innovation, i^2

The Interventions

From July through December 2015, the team designed a strategy to build a standardized schedule template for physicians, fellows, and nurse practitioners.

- Standardized appointment types and lengths using 20 and 40 minute visit types for revisits
- Designed a provider template blueprint to visualize the flow of patient
- Visit types developed in CCC to automate the scheduling process using special features such as concurrent visits and max lead time
- Pilot a new check out process including a new check out slip to improve communication between providers and schedulers

The Results/Progress to Date

In January 2016 templates went live in CCC. The team is in the early phases of refining templates and the scheduling process.

The following is a pre and post comparison of Hem/Onc provider schedules. The original model relied on double booking patients in 30 minute slot. The new model utilizes a staggered start method to align the needs of the patient with the appropriate amount of provider time.

Before – 30 minute appointment types

Time	Schedule
10:30 – 11:00 am	NP Revisit with Staff [Gonzo], Revisit [Piggy] Fellow Visit [Beaker]
11:00 – 12:00 pm	New Patient [Kermit]

After – 20 and 40 minute appointment types

Time	NP Schedule	Fellow Schedule	Attending Schedule
10:40	NP Revisit [Gonzo]		Revisit [Piggy]
11:00	Independent NP Visit [Beaker]	New Patient Visit with Fellow [Kermit]	NP Revisit with Staff [Gonzo]
11:20	Independent NP Visit [Ralph]		Revisit [Fozzie]
11:40 – 12:00 PM	Independent NP Visit [Scooter]		New Patient Visit with Fellow and Staff [Kermit]

Lessons Learned

- The appointment type design and development process required clarity and alignment of roles and responsibilities.
- There are a number of ways to manage and design schedules in CCC.

Next Steps/What Should Happen Next

- Will measure template effectiveness by measuring patient volume, appointment availability, as well as process measures such as on time start.
- February through April, monthly meetings will gather feedback on how to improve template performance as well as develop care coordination workflows to optimize patient flow.

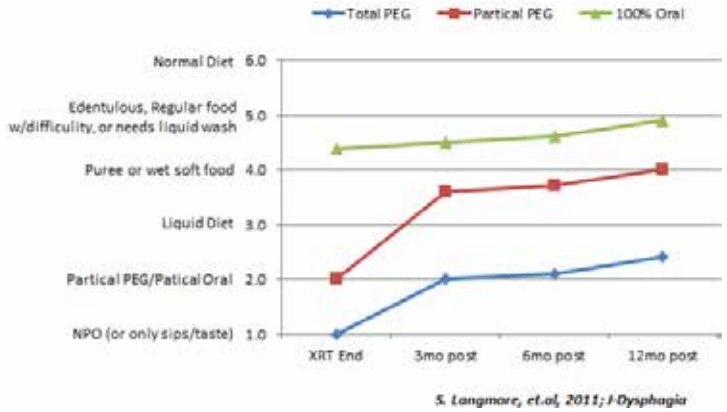
For more information, contact: Chris Rodrigues, Senior Project Manager
Office of Improvement and Innovation, i^2 cjrodrig@bidmc.harvard.edu.

Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | THE SILVERMAN INSTITUTE For Health Care Quality and Safety

Improving Patient Outcomes with Therapy During & After Head & Neck Cancer Treatment

The Problem:

Severe swallowing disorders & decreased quality of life have been found in patients following concurrent chemotherapy & radiation treatment for head & neck cancer. Previous practice consisted of feeding tube placement (PEG) in all patients prior to the start of chemotherapy & radiation treatment (CXRT) for head & neck cancer. New research has shown better long-term swallowing outcomes & better preservation of swallowing-muscle strength/ function when patients continue to eat/drink during treatment:



S. Langmore, et.al, 2011; J Dysphagia

Therefore, In 2013 the Head & Neck cancer team at BIDMC stopped placing feeding tubes prophylactically, and started following patients weekly in nutition and swallowing therapy.

Aim/Goals:

To avoid weight loss / maximize nutrition & hydration
To preserve swallowing-muscle strength, range of motion & function
To reduce the severity of altered tissue integrity in the mouth & throat
To provide education/strategies to successfully manage the side effects of CXRT
To improve long-term outcomes & quality of life for patients post-treatment
To improve Interdisciplinary collaboration /coordination of care

The Team

Brooke Littleton, MS, CCC-SLP
Cynthia Wise Wagner, MS, CCC-SLP, BCS-S
Lauren Fay, RD, CSO, LDN, CNSC
Frank McCaffrey, LICSW
Robert Frankenthaler, MD
Anand Mahadevan, MD
Anupam Desai, MD
Nancy France, RN

The Results/Progress to Date

- Patients who are able to comply with this new treatment protocol:
  - Resume a close-to-normal diet sooner post-treatment.
  - Report improved quality of life when able to have PEG removed.
  - Return to a full PO diet more quickly.
  - Are more likely to avoid PEG placement or use PEG less.
- Swallowing therapy & Nutrition services are also provided in the BID-Needham Cancer Center since November, 2014.

The Interventions

Speech-Language Pathologist & Dietician now participate in weekly interdisciplinary Head & Neck rounds with MD team & Coordinate a monthly Head & Neck support group meeting facilitated by Social Work.

- Speech-Language Pathologist (SLP) provides:
  - Pre & Post-Treatment Videoswallow Evaluations, swallowing therapy during & after CXRT & counseling / education to optimize swallowing function as status changes, decrease aspiration & improve quality of life.
- Registered Dietician (RD) provides:
  - Pre & Post- Treatment evaluation & nutrition counseling until the patient can independently manage nutrition needs & Weekly sessions during CXRT with RD to provide/update nutrition support recommendations & determine need for feeding tube.

Lessons Learned

- Weekly sessions with patients during treatment result in better understanding of patient challenges & faster adaptation of interventions to better achieve swallowing & nutritional goals.
- Close post-treatment follow-up is beneficial to prevent severe swallowing disorders, especially in patients with longer life expectancy.
- Barriers to success include: Limited social support, Fatigue, Ongoing substance use, Financial limitations, Cultural differences, Patient buy-in.

Next Steps/What Should Happen Next

- Collect Data on Patient Outcomes, including percentage of patients who are meeting nutritional needs with minimal dietary restrictions at post-treatment videoswallow, and at one year post-treatment.
- Swallowing & nutrition follow-up at regular intervals to provide early identification & treatment prior to the development of late-radiation effects, such as fibrosis.

Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | THE SILVERMAN INSTITUTE For Health Care Quality and Safety

For more information, contact:
Cynthia Wise Wagner, MS, CCC-SLP, BCS-S
cwagner@bidmc.harvard.edu

Infusion & Pheresis Scheduling Improvement

Context/Opportunity

The Infusion & Pheresis department provides two distinct services to the BIDMC population. It provides Infusion Services to a diverse patient population and procedures such as Apheresis and Stem Cell Collections to both the inpatient and ambulatory population. Due to the varied nature of services and unpredictability of volume, patient scheduling became problematic. It became increasingly more difficult to accommodate patients in the time frame that they needed to be seen. This in turn decreased patient satisfaction.

Goal

To increase the availability of appointment times and to increase the efficiency of physical resources and staff time.

Team

- Ryan Graue, Sr. Project Manager, Improvement & Innovation
- Ayad Hamdan, Medical Director, Infusion & Pheresis
- Theresa Normile, Nursing Director, Infusion & Pheresis
- Cindy Ferrucci, Resource Nurse, Infusion & Pheresis
- Michelle Knox, Resource Nurse, Infusion & Pheresis
- Deb Melia, Resource Nurse, Infusion & Pheresis
- Sue Nessen, RN, Infusion & Pheresis
- Irene Jordan, Applications Specialist, Ambulatory Systems

Interventions

Booking methodology: Process changed from booking patients to nurses to booking patients to chairs.

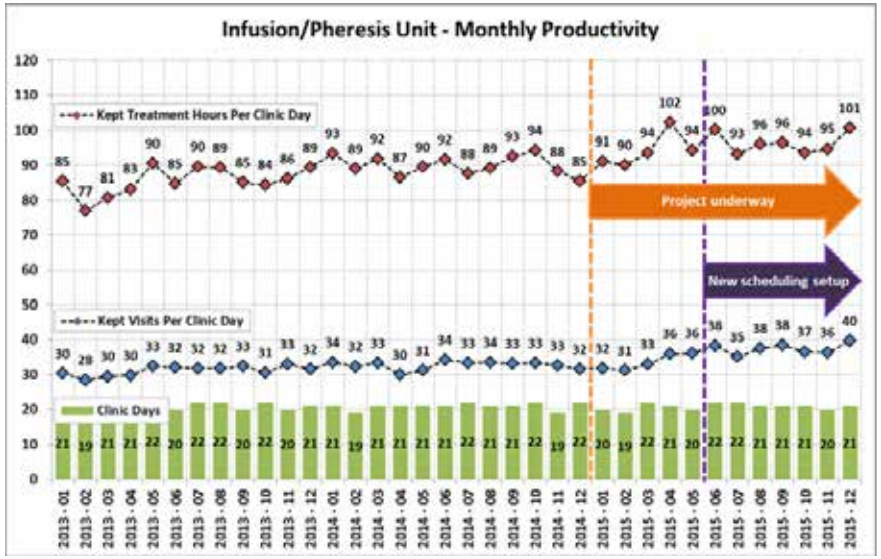
Nurses' schedules: Schedules changed to create consistent coverage throughout the week.

Booking parameters: Practice Assistants were trained to book appointments with specific parameters.

Space reconfiguration: Dedicated space was created to accommodate Procedures and Urgent Visits.

Results/Progress to Date

Comparing 6/2015-12/2015 to 6/2014-12/2014, kept visits per clinic day increased 13% (37.4 vs. 33.1), and kept treatment hours per clinic day were up 7.3% (96.4 vs. 89.8).



Lessons Learned

Nursing schedules were changed from fixed to variable, which was a culture change for staff that required leadership and open communication. Also, specific scheduling parameters (such as limitations on how many patients can start simultaneously) needed to be explained in detail to help front desk staff learn.

Next Steps

- Separating Infusion "Pods" and Procedure Rooms
- Building and rolling out an Appointment Finder tool
- Exploring additional creative scheduling opportunities for patients and providers (e.g., adjusting staggered starts)

Beth Israel Deaconess Medical Center | Harvard Medical School Teaching Hospital | The Silverman Institute for Health Care Quality and Safety

For more information, contact:

Ryan Graue, MS/MBA, Sr. Project Mgr, Process Improvement

rgraue@bidmc.harvard.edu

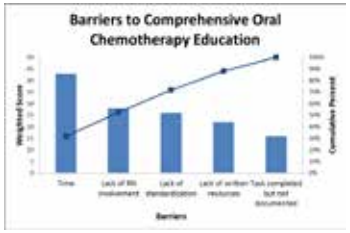
Integrating Nursing into Oral Chemotherapy Education

Meghan E. Shea MD, Nancy C. Weinstein BSN RN, Zaven R. Norigian PharmD BCOP,
Virginia J. Seery MSN RN ANP-BC, Jessica A. Zerillo MD

Beth Israel Deaconess Medical Center
Cancer Center
HARVARD MEDICAL SCHOOL TEACHING HOSPITAL

Background

- Shift of chemotherapy from intravenous to oral administration leaves patients vulnerable to errors
- 2013 American Society of Clinical Oncology/Oncology Nursing Society provide guidelines for oral chemotherapy education, including administration, safe handling and side effects
- Patients prescribed oral chemotherapy at BIDMC currently have inconsistent oncology nursing involvement
- A multi-disciplinary team of MDs, NP, RN, and pharmacist selected for the process improvement project to pilot in biologics clinic (caring for patients with renal cell cancer and melanoma)
- Survey of clinicians with response rate 100% (n=9) ranked patient education as top priority; lack of nursing involvement and time most common contributing factors to patients not receiving comprehensive education

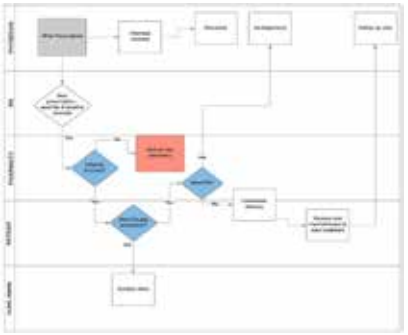


Problem Statement: Patients receive variable education regarding administration, safe handling, and side effects when initiating oral chemotherapy. The barriers were most often lack of time, RN involvement, standardization, and written resources. Least often the task was completed but not documented.

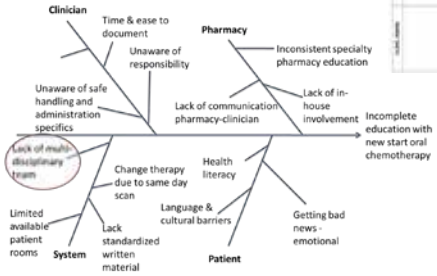
Methods

Aim: By February 1, 2016, 50% of patients initiating oral chemotherapy in biologics clinic will have documentation of comprehensive education, including administration, safe handling and side effects.

Process Map (right): Team meeting identified lack of RN involvement in education of patients



Cause & Effect (below): Team identified barriers to reaching goal of comprehensive education for new start oral chemotherapy and highlighted lack of multi-disciplinary approach

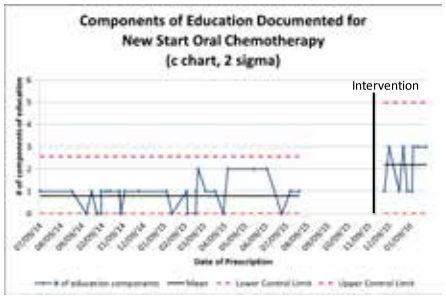


Priority Matrix (figure not shown): Team identified possible interventions to improve comprehensive education and then rated them by the degree of difficulty to implement as well as the degree of impact. Used matrix as a guide for choosing first intervention.

Intervention:

- Team created drug specific template notes for documentation in electronic medical record
- RN education session utilized template as a script for reviewing administration, safe handling and side effects in person or by phone by first follow up appointment

Results



Baseline: July 2014-August 2015, 33 new prescriptions; zero patients received comprehensive education
First Plan-Do-Study-Act (PDSA): November 10, 2015 to February 1, 2016, 10 new prescriptions; 60% patients seen by RN and all received comprehensive education

Conclusions & Next Steps

- Reached aim of >50% of patients receiving comprehensive education by integrating nursing
- Achieved special cause with single point post-intervention above pre-intervention upper control limit
- Plan to implement second PDSA cycle adding RN follow-up phone call 1-2 weeks after new start to current intervention
- Evaluate impact of RN education on patient satisfaction
- Measure and record time for RN education to help assess feasibility of expanding process to all oncology clinics

Abstract # 81; Contact: mshea4@bidmc.harvard.edu

Patient Preferences & Understanding of the Breast Imager's Role in Performing and Communicating Biopsy Results

The Problem

Health care is becoming more of a value-based system and as a result, radiologists need to increase their visibility and role in clinical medicine. Within the field of breast radiology, staff routinely communicate all results of diagnostic exams with a patient directly, at the conclusion of the study. However, biopsy results are typically communicated to the patient by the referring clinician. Given the breast radiologists understanding of the management of a wide array of pathologic results, perhaps patients would prefer to hear results directly from the clinician performing the biopsy, which would increase radiologist visibility and perceived value.

Aim/Goal

1) To evaluate patient understanding of the breast radiologist and their role in breast care.
2) To evaluate from whom patients want to hear breast biopsy results, and with what mode of communication.
3) To understand if the interaction between the patient and the radiologist impacted the patient's perception of the breast radiologist, and the desired method of communication.

The Team

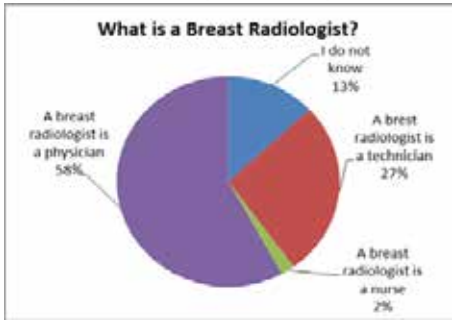
1) Breast Imagers: Jordana Phillips, MD, Hannah Perry, MD, MS, Vandana M. Dialani, MD, Valerie J. Fein-Zachary, MD, Evguenia Karimova, MD, Priscilla J. Slanetz, MD, MPH, Shambhavi Venkataraman, MD, Richard E. Sharpe JR, MD, MBA, Tejas S. Mehta, MD, MPH
2) Breast Imaging Technologists and Technical Assistants
3) Breast Imaging Nurse Practitioner: Nancy Littlehale, NP

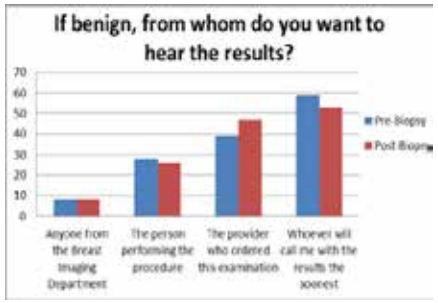
The Interventions

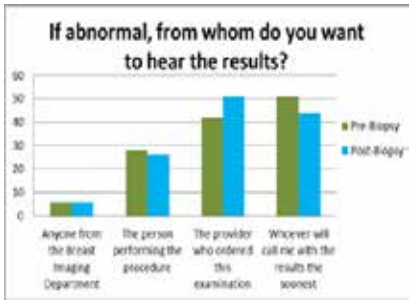
For this quality assurance study, an anonymous 2-part survey was given to patients to complete before and after undergoing either an ultrasound-guided core biopsy or a stereotactic biopsy. The survey was created using SurveyMonkey®. Patient information gathered through the survey included data on demographics, familiarity with the BIDMC breast imaging department, and the patient's pre- and post-biopsy understanding of what a breast radiologist is and their role in breast care. Patients were also asked from whom they wanted to hear their biopsy results and with what method. Initial data collection took place during March 2015-October 2015.

The Results/Progress to Date

A total of 155/572 (27%) patients completed both portions of the survey.







Lessons Learned

Only 27% of eligible patients completed the survey. Among patients who responded, fewer than 60% knew that a breast radiologist is a physician, but 95% felt that the breast radiologist was essential to their care. This suggests lack of understanding of the breast radiologist, and is an opportunity for patient education. Regardless of the pathology, patients want to hear biopsy results from whoever will call soonest, followed by the ordering provider. In both groups, patients preferred to receive results communication by phone.

Next Steps/What Should Happen Next

We will provide patient education on what a breast radiologist is and their role in breast health. We will also begin surveying referring physicians to evaluate their preferences regarding biopsy result communication. We will use this data to inform future practice change.

For more information, contact:
Hannah Perry, MD, MS, Resident in Diagnostic Radiology
hperry@bidmc.harvard.edu

Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | THE SILVERMAN INSTITUTE For Health Care Quality and Safety

Wide Excision Alone for DCIS – What is the optimal screening interval after initial diagnosis? Are there predictors of recurrence?

The Problem

Ductal carcinoma in situ (DCIS) of the breast is increasingly diagnosed, and now represents 20-25% of all breast cancers in the United States. An option for treatment of DCIS entails breast conserving surgery (BCS) followed by radiation therapy, however, given recent concerns for over treatment, many providers opt to follow patients with close imaging intervals at 6-month intervals for 2-5 years following surgery, rather than undergoing radiation therapy. There is great variation in practices across providers at our hospital and institutions around the country in terms of how these patients should be followed.

Aim/Goal

1) To determine the optimal imaging interval for women diagnosed with DCIS treated only with wide local excision.
2) To identify patient characteristics and risk factors to predict a higher risk of recurrence.

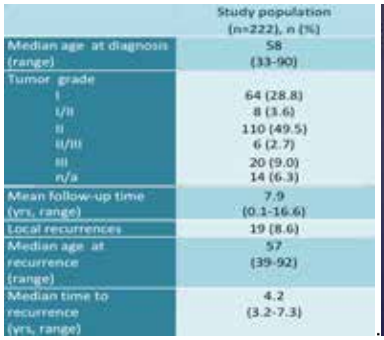
The Team

- Dr. Pritesh Mehta M.D. Department of Radiology
- Dr. Alessandra Mele, M.D. Department of Surgery.
- Dr. Abram Recht M.D. Department of Radiation Oncology.
- Dr. Alexander Brook PhD. Department of Radiology
- Dr. Ranjna Sharma M.D. Department of Surgery.
- Dr. Priscilla Slanetz M.D., MPH Department of Radiology.

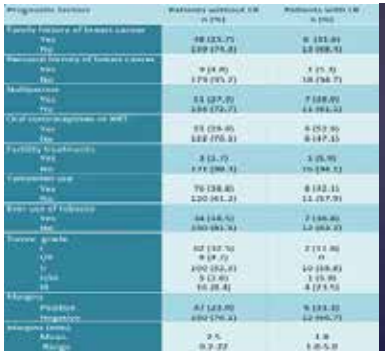
Methods

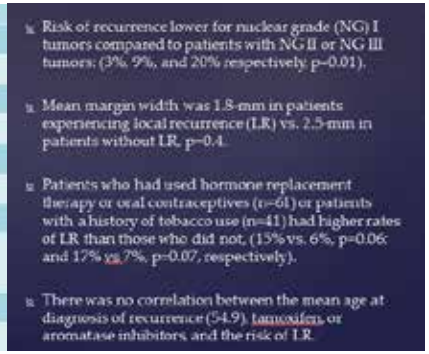
- *All patients with DCIS treated with wide local excision alone (WLE) at Beth Israel Deaconess Medical Center, Boston, between 2000 and 2010 were identified.*
- *Of the 281 patients in this cohort, 59 patients were excluded because they were not followed in our institution after undergoing WLE. 222 patients remained eligible.*
- *For each patient, we collected data on imaging interval, demographics, parity, risk factors, tumor specific characteristics, personal or family history of breast cancer, exogenous hormone use, tobacco use, comorbidities, and genetic mutation carrier status.*
- *Statistical analysis entailed the use of a paired t-test and Fischer exact test.*

The Results

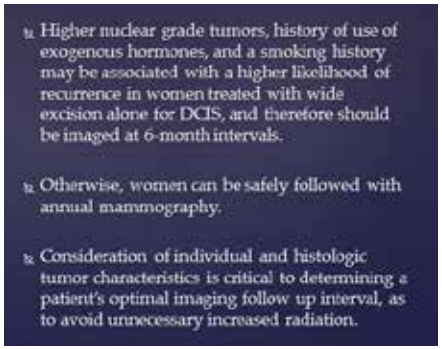


	Study population (n=222), n (%)
Median age at diagnosis (range)	58 (33-90)
Tumor grade	
I	64 (28.8)
I/II	8 (3.6)
II	110 (49.5)
II/III	6 (2.7)
III	20 (9.0)
n/a	14 (6.3)
Mean follow-up time (yrs, range)	7.9 (0.1-16.6)
Local recurrences	19 (8.6)
Median age at recurrence (range)	57 (39-92)
Median time to recurrence (yrs, range)	4.2 (3.2-7.3)





Conclusions



Next Steps

- The data will be presented to the BIDMC breast radiology section, in hopes of garnering further discussion, and possibly effecting change in individual physician practice.
- The study will be submitted for national peer review, in hopes of publication and stimulating policy discussions regarding optimum imaging interval for this population of patients.

Beth Israel Deaconess Medical Center | HARVARD MEDICAL SCHOOL TEACHING HOSPITAL | THE SILVERMAN INSTITUTE For Health Care Quality and Safety

For more information, contact:
Pritesh Mehta M.D., Department of Radiology.
pmehta@bidmc.harvard.edu.

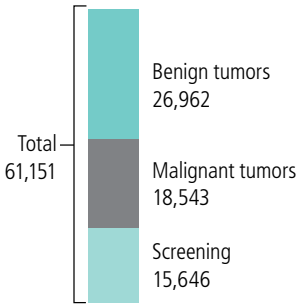
2016 Cancer Center at BIDMC Fact Sheet

5 Clinical Affiliations

Suburban Convenience

In addition to our Boston location, BIDMC Cancer Center specialists provide advanced diagnostics and cancer therapies at the Lank Cancer Center in Needham.

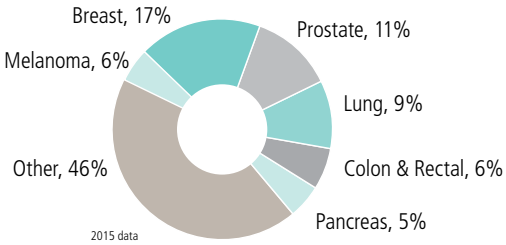
Cancer Center Patients



Pier Paolo Pandolfi, MD, PhD
BIDMC Cancer Center Director
Pezcoller Award winner

Manuel Hidalgo, MD
Clinical Director and
Chief of Hematology/Oncology

5 Cancers Most Frequently Treated at BIDMC



280 Clinical and Research Faculty

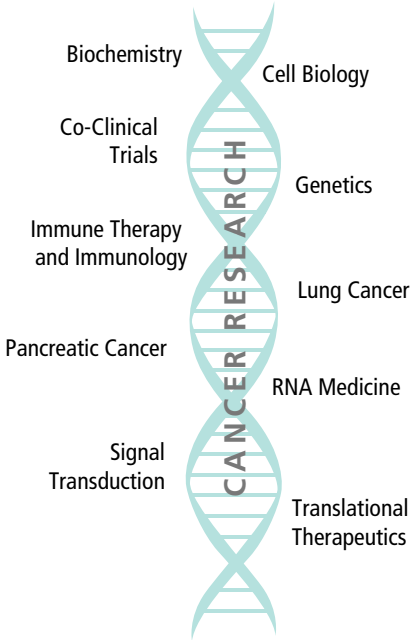
9 Multidisciplinary Clinics

Brain Tumor	Breast Care	Colon and Rectal
Kidney	Liver	Lung
Melanoma/ Skin	Pancreatic	Prostate

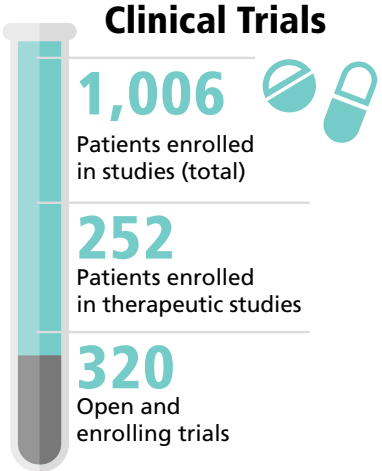
Supportive Services

- Online community for patients: **cancercommunity.bidmc.org**
- Oncology nutrition services
- Oncology social work and psycho-oncology clinic
- Palliative and pastoral care
- Meditation and reiki
- Many more at bidmc.org/cancercenter

Cancer Research Institute



Clinical Trials



7 Research Affiliations

- Dana-Farber/ Harvard Cancer Center
- Eastern Cooperative Oncology Group
- Harvard Ludwig Center
- The Jackson Laboratory
- The National Cancer Institute
- Pancreatic Cancer Research Team
- Radiation Therapy Oncology Group

2016 data unless specified. Printed April 2017.

Cancer Center Oversight Committee

Pier Paolo Pandolfi, MD, PhD
Director, Cancer Center
Director, BIDMC Cancer Research Institute
Chief, Division of Genetics, Department of Medicine
George C. Reisman Professor of Medicine*
Professor of Pathology*

Elliot Chaikof, MD, PhD
Chair, Roberta and Stephen R. Weiner Department of Surgery
Surgeon-in-Chief
Johnson and Johnson Professor of Surgery*

William M. Decaneas, MA
Administrative Director, Cancer Center

Manual Hidalgo, MD, PhD
Chief, Hematology/Oncology
Director Leon V and Marilyn Rosenberg Clinical Cancer Center
Theodore W. and Evelyn G. Berenson Professor of Medicine
in the Field of Oncology*

Jonathan Kruskal, MD, PhD
Chief, Department of Radiology
Professor of Radiology*

Jeffrey E. Saffitz, MD, PhD
Chair, Department of Pathology
Mallinckrodt Professor of Pathology

Samuel Skura
Chief Administrative Officer, Department of Medicine

Mary Ann Stevenson, MD, PhD
Chair, Department of Radiation Oncology
Associate Professor of Radiation Oncology*

Ellen Volpe, MBA
Projects Director - Department of Medicine
Interim Administrative Director, Hematology/Oncology

Mark L. Zeidel, MD
Chair, Department of Medicine
Herrman Ludwig Blumgart Professor of Medicine*

** Faculty member, Harvard Medical School*

Cancer Care Committee

Physician members

Mary Jane Houlihan, MD, Co-Chair
Surgery
Assistant Professor of Surgery*

Irving Kaplan, MD, Co-Chair
Radiation Oncology
Assistant Professor of Radiation Oncology*

Musa M. Aner, MD
Anesthesia
Assistant Professor of Anesthesia*

Christopher Awtrey, MD
Chief, Gynecologic Oncology
Assistant Professor of Obstetrics,
Gynecology and Reproductive Biology*

Andrea Bullock, MD
Medical Oncology
Instructor in Medicine*

Kelly Bodio Downey, MD
Medical Oncology
Instructor in Medicine*

Mary Buss, MD
Medical Oncology
Director, Palliative Care
Assistant Professor of Medicine*

Kevin Donohoe, MD
Radiology
Assistant Professor of Radiology*

Lachlan Forrow, MD
Director of Ethics Programs
Director of Palliative Care Programs
Associate Professor of Medicine*

Cynthia Hayne, MD, PhD
Anatomic Pathology
Instructor in Pathology*

Manual Hidalgo, MD, PhD
Medical Oncology
Chief of Hematology/Oncology
Director, Leon V. and Marilyn L. Rosenberg Clinical Cancer Center
Theodore W. and Evelyn G. Berenson Professor of Medicine
in the Field of Oncology*

Ekkehard Kasper, MD, PhD
Neurosurgery
Associate Professor of Neurosurgery*

Michael Kent, MD
Thoracic Surgery
Assistant Professor of Surgery*

A. James Moser, MD, FACS
Director, Institute for Hepatobiliary and Pancreatic Surgery
Associate Professor of Surgery*

Ranjna Sharma, MD
Breast Surgery
Assistant Professor of Surgery*

Tung, Nadine, MD
Director, Cancer Genetics and Prevention
Medical Oncology
Associate Professor of Medicine*

Jessica Zerillo, MD
Director, Health Care Quality
Medical Oncology
Instructor in Medicine*

** Faculty member, Harvard Medical School*

Cancer Care Committee

Non-physician memebers

Gerry Abrahamian, RHIT
Health Information Management

Lynn Basilo
American Cancer Society

Matthew Cadorette, CTR
Oncology Registry

Murray Corliss, RN
Ostomy Nursing

William M. Decaneas, MA
Administrative Director, Cancer Center at BIDMC

Jonathan Dinsmore, PhD
Director, Cancer Clinical Trials Office

Linda Goorin, LICSW
Social Services

April Isaac
Administrative Director of Operations, BreastCare Center

Nancy Kasen
Director, Community Benefits

Janet McGrail
American Cancer Society

Kathleen Murray
Health Care Quality

Donna Quinn, RN
Radiation Oncology

Katie Rimer
Director, Spiritual Care

Patricia Samour, RD
Director, Nutrition Services

Hester Hill Schnipper, LICSW
Program Manager, Hematology/Oncology Social Work

Investigator Oversight Committee Members

Glenn Bubley, MD, Chair
Chair of the Investigator Oversight Committee
Director, Genitourinary Oncology
Associate Professor of Medicine*

William M. Decaneas, MA
Administrative Director, Cancer Center

David Avigan, MD
Director, Hematologic Malignancy and
Bone Marrow Transplant Program
Professor of Medicine*

Andrea Bullock, MD
Medical Oncology
Instructor in Medicine*

Stephen Cannistra, MD
Medical Oncology
Professor of Medicine*

Peter Chang, MD
Director, Prostate Cancer Program
Surgery
Assistant Professor of Surgery*

Steven Come, MD
Director of Breast Medical Oncology
Medical Director of the Cancer Clinical Trials Office
Associate Professor of Medicine*

Daniel Costa, MD, PhD, MMSc
Medical Director Cancer Clinical Trials Office
Medical Oncology
Associate Professor of Medicine*

Jonathan Dinsmore, PhD
Director, Cancer Clinical Trials Office

Stephen Duggan
Cancer Clinical Trials Specialist
Cancer Clinical Trials Office

Jennifer Espiritu, Pharm. D.
Clinical Pharmacy Coordinator - Oncology Research
Department of Pharmacology

Jonathan Hecht, MD, PhD
Director, Autopsy Service
Associate Professor of Pathology*

Manuel Hidalgo, MD, PhD
Chief, Hematology/Oncology
Director, Leon V. and Marilyn L. Rosenberg Clinical Cancer Center
Theodore W. and Evelyn G. Berenson Professor of Medicine
in the Field of Oncology*

Robin Joyce, MD
Director, Research Operations, Bone Marrow Transplant Program
Assistant Professor of Medicine*

Anand Mahadevan, MD
Radiation Oncology
Assistant Professor of Radiation Oncology*

David McDermott, MD
Director, Biologic Therapy and Cutaneous Oncology Programs
Leader, Kidney Cancer Program, Dana-Farber Harvard Cancer Center
Associate Professor of Medicine*

James Mier, MD
Medical Oncology
Associate Professor of Medicine*

Pier Paolo Pandolfi, MD, PhD
Director, Cancer Center
Director, Cancer Research Institute
Chief, Division of Genetics, Department of Medicine
George C. Reisman Professor of Medicine*
Professor of Pathology*

Mary Ann Stevenson, MD, PhD
Chair, Radiation Oncology
Associate Professor of Radiation Oncology*

Nadine Tung, MD
Director, Cancer Genetics and Prevention Program
Medical Oncology
Associate Professor of Medicine*

Eric Wong, MD
Director, Neuro-Oncology Unit
Co-Director, Brain Tumor Program
Associate Professor of Neurology*

Jeffrey Zwicker, MD
Hematology
Associate Professor of Medicine*

** Faculty member, Harvard Medical School*

Cancer Center

Beth Israel Deaconess Medical Center

HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL

330 Brookline Avenue, Boston, MA 02215
(617) 667-1900

bidmc.org/cancercenter