On the cover (clockwise from top left): Michael Liptay, MD, thoracic surgeon; Vivian Joffré, BS, RT (R) (CT), radiology technician; Sohrab Mobarhan, MD, gastroenterologist, and Jitesh Pratap, PhD, and Manish Tandon, PhD, researchers.

Photography by Eric Herzog, Scott Strazzante and the Rush Photo Group.
While there are more tools than ever before, we must determine which are best suited for each patient. At Rush, both clinicians and researchers strive to apply these tools in meaningful ways to advance quality patient care. It’s an approach we refer to as thoughtful medicine.
As new technologies, innovative therapeutic options and outcome data become available, the roles of cancer specialists become more challenging. While there are more tools than ever before, we must determine which are best suited for each patient.

**THOUGHTFUL MEDICINE**
At Rush, both clinicians and researchers strive to apply these tools in meaningful ways to advance quality patient care. In an approach we refer to as thoughtful medicine, they focus on providing the following:

- Fewer unnecessary tests and treatments
- Less toxic drugs
- Greater access to care for underserved populations
- Better patient experiences and quality of life
- Ongoing support for emotional and physical needs

**A MINDFUL APPROACH TO PATIENT CARE, TECHNOLOGY, DATA AND MORE**
In this report, we take a look at our 2012 cancer registry numbers (see p. 22) as well as showcase work at Rush that illustrates this more mindful approach and how it is applied to patient care, use of technology and application of data. Below are some additional examples:

**Expanding access:** In July, the Rush Radiation Therapy Center at Rush Oak Park Hospital opened. The center offers patients in the near western suburbs external beam radiation therapy along with other treatments, such as three-dimensional conformal radiation therapy and intensity-modulated radiation therapy. These treatments are performed by the same specialists using the same equipment as those at Rush in Chicago.
Taking a lead with outcomes data: Gynecologic oncologist Summer Dewdney, MD, played a lead role in designing the Society of Gynecologic Oncology’s new clinical outcomes registry. This is one of the first national databases to focus on surgical gynecologic oncology, including ovarian, endometrial and cervical cancers. Rush is among the first sites nationwide enrolling patients in the registry, which will allow hospitals to improve the quality of patient care.

Improving safety and quality: Medical oncologist Philip Bonomi, MD, and his staff will soon implement the “lean” method for improving patient safety and quality while reducing costs in The Coleman Foundation Comprehensive Lung Cancer Clinic at Rush. By addressing processes step-by-step, the lean approach is designed to enhance patient care.

Bonomi and his staff are also collaborating with pharmacy staff to develop and validate chemotherapy regimens while standardizing supportive care agents in preparation for the implementation of the electronic oncology module BEACON. The number of infusion patients has tripled over the last six years and has increased by 23 percent in the last year.

Targeted approaches for prostate cancer: Ajay Nehra, MD, Charles McKiel, Jr., MD, and other urologists at Rush are the first in Chicago to offer a powerful new tool for visualizing and monitoring the prostate in men who have high prostate-specific antigen levels. The new technology fuses magnetic resonance (MR) and ultrasound images using a tiny tracking sensor attached to an ultrasound probe. A sophisticated computer program maintains the fusion of MR and ultrasound images, even if a patient moves. During a 20-minute outpatient procedure, physicians can more precisely obtain biopsies, rather than randomly sampling the prostate (an approach that has been in use since the 1980s).

Clinical trials: Many clinicians at Rush are actively involved in research on targeted therapies, including medical oncologists Marisa Hill, MD, and John Showel, MD. Hill is principal investigator in a multicenter randomized phase III trial of targeted radioembolization therapy (during which radioactive particles are delivered to tumors through the bloodstream) for patients with liver metastasis from colon cancer. Showel is conducting phase III studies of a dendritic cell immunotherapy in advanced renal cell carcinoma.

A COLLABORATIVE EFFORT

I would like to take this opportunity to thank the many organizations with which Rush collaborates to provide high-quality patient care, including the Commission on Cancer of the American College of Surgeons.

In addition, I’d like to extend my gratitude to everyone involved in the cancer program for their dedication and commitment to our patients. At each and every level at Rush, staff make unique contributions that raise our standards of care.

Aidnag Diaz, MD, MPH
Chair, Cancer Committee
At the Rush University Cancer Center, multidisciplinary teams are mindful of the unique complexities involved in treating cancer patients. Clinical trials on innovative immunotherapies offer hope for less toxic treatments. Efforts to improve access to quality care allow more patients to have a chance for successful outcomes. And new initiatives address short- and long-term side effects of life-saving treatment.
“The immune response is directed only against tumor cells. This spares patients side effects and toxic effects seen with other therapies.”

Nina A. Paleologos, MD, neuro-oncologist

CLOSING THE GAP IN BREAST CANCER SURVIVAL

While breast cancer mortality has decreased in recent years, racial disparity has increased, with black women in Chicago nearly 40 percent more likely to die from the disease than white women. According to research by the Metropolitan Chicago Breast Cancer Task Force — whose president is David Ansell, MD, MPH, Rush's chief medical officer — regular, high-quality mammography screening can help close this gap. Access to quality screening, diagnosis and treatment are considered key.

- **Promoting access:** At Rush in 2013, a Susan G. Komen Foundation nurse navigator offered services ranging from breast health education to transportation for underserved women so they could obtain high-quality mammograms. Janice Lott-Hopgood, RN, OCN, HPCRN, CBORN, followed patients with suspicious findings to ensure they received prompt diagnosis and treatment.

- **New space, digital technology:** High-quality breast imaging is available at the newly constructed Regenstein Breast Imaging Center at Rush, which offers a soothing environment and advanced imaging technology. Under the leadership of breast radiologist Peter Jokich, MD, the center now features digital imaging as well as separate facilities for women receiving screening and diagnostic mammograms to allow care to be better tailored to the unique needs of each group.

DETECTING AND MANAGING SIDE EFFECTS OF LIFE-SAVING TREATMENT

As more and more cancer patients are living longer, they may need support with issues related to surviving cancer, including managing short- and long-term effects of cancer therapies, as they transition from treatment and return to their normal lives.

- **Survivor clinics for leukemia and breast cancer:** Multidisciplinary teams led by breast oncologists Melody Cobleigh, MD, and Ruta Rao, MD, and hematologist/oncologists Melissa Larson, MD, and Parameswaran Venugopal, MD, work closely with advanced practice nurses (Sarah Anzevino, APN-NP; Teri Dougherty, APN-NP; and Allison Morin, APN-NP) to provide survivor services for patients with breast cancer and leukemia. Services include assessment of physical and psychosocial issues related to treatment, surveillance for recurrence, screening and prevention for other cancers and lifestyle strategies. Rush plans to open survivor clinics for all of its cancer programs in the next year or two.

- **Addressing cardiac impact:** In the new cardio-oncology clinic at Rush, Tochi M. Okwuosa, DO, an oncocardiologist, collaborates with medical oncologists to prevent, detect and manage the effects of chemotherapies and radiation therapy on the heart, as well as to manage patients with existing cardiac comorbidities so they can tolerate necessary treatment. Since chemotherapy- or radiation-induced cardiac problems sometimes develop years after successful cancer treatment, doctors at Rush encourage long-term follow-up.

HARNESSING PATIENTS’ IMMUNE SYSTEMS

Several investigators at Rush are evaluating vaccines and other treatments that may improve function and survival, and are more easily tolerated by patients.

- **Vaccine trials:** Neuro-oncologist Nina A. Paleologos, MD, for example, is principal investigator at Rush of two multicenter trials of CDX 110, a vaccine against a variant of epidermal growth factor receptor (EGFR) called EGFRvIII in patients with glioblastoma multiforme whose tumor cells overexpress that specific receptor. One trial is for patients with newly diagnosed tumors (ACT IV), and the other is for patients whose tumor has recurred (REACT). The vaccine is given with standard treatments.

These therapies are very specific. EGFR is present on many normal tissue cells, but EGFRvIII is present only on tumor cells and not normal brain cells or other cells in the body. "The immune response is directed only against tumor cells," Paleologos says. "This spares patients side effects and toxic effects seen with other therapies."
THOUGHTFUL USE OF TECHNOLOGY

At Rush, physicians have the latest technology at their fingertips. But before using technology, they carefully consider which patients can most benefit and how a particular technology can be tailored to each patient’s needs. They pursue ways to use technology to provide early diagnosis yet avoid unnecessary tests, prolong survival with the highest quality of life and monitor treatment efficiently with the fewest side effects.

Pictured above: Radiation oncologist David Sher, MD, MPH, and diagnostic radiologist Palmi Shah, MD, are collaborating to investigate the use of dual energy CT to monitor the effectiveness of radiation therapy.
“By using this technology for patients with metastatic brain cancer, we can focus on improving quality of life, not just prolonging it. We want to help our patients live better lives.”

Aidnag Diaz, MD, MPH, radiation oncologist

COUPLING TECHNOLOGY WITH INNOVATION IN LABORATORY TESTING

Results from the National Cancer Institute’s National Lung Cancer Screening Trial showed that screening high-risk patients for lung cancer with low-dose spiral CT reduced mortality by 20 percent relative to chest X-ray, but more than 95 percent of the nodules detected were not cancer. These false positives will trigger additional diagnostic procedures, which carry significant cost and risks.

- **Blood test offers promise:** “A blood test being developed by biochemist Jeffrey A. Borgia, PhD, at Rush could help greatly reduce or eliminate unnecessary invasive diagnostic tests in select patients and bring those numbers down,” says pulmonologist Mark A Yoder, MD, who conducted follow-up studies of low-dose spiral CT at Rush.

- **Published results:** Borgia, Yoder, thoracic surgeon Michael Liptay, MD, and colleagues at Rush recently published an article in the *Journal of Thoracic Oncology* that demonstrates that their blood test is highly efficient at ruling out lung cancer in patients with indeterminate lung nodules. More recent refinements to the test in Rush’s laboratories have improved its accuracy in confirming cancer. Researchers plan to validate the test in prospective multi-institutional trials.

In the future, the test could also be adapted to identify additional candidates who might benefit from screening CT but who don’t qualify under current guidelines.

EXTENDING QUALITY OF LIFE ALONG WITH SURVIVAL

Aggressive treatment of brain metastases has been shown to increase survival time significantly in select patients.

- **Aggressive yet mindful:** Radiation oncologist Aidnag Diaz, MD, MPH, and neurosurgeon Lorenzo Muñoz, MD, treat eligible patients with cerebral metastasis with a combination of surgical resection followed by stereotactic radiosurgery using the TrueBeam STx linear accelerator. The treatment is appropriate for patients with up to five brain lesions.

  Compared with previous stereotactic equipment, the TrueBeam provides the following according to Diaz:
  - Higher-level imaging
  - More comfort for patients
  - Eradication of lesions in half the time

- **Meaningful results:** This allows patients to preserve brain function longer, including cognition, with few side effects. Diaz and Muñoz published results of their treatment in *Surgical Neurology International* showing treatment is well-tolerated and survival statistics compare favorably with national averages.

USING DUAL-ENERGY CT TO TAILOR LUNG CANCER TREATMENT

Traditional CT and PET scans cannot adequately monitor treatment for lung cancer, says radiation oncologist David Sher, MD. That’s why he and diagnostic radiologist Palmi Shah, MD, are investigating at Rush a novel use of dual-energy CT to monitor treatment response for stage III non-small cell lung cancer.

- **Measuring blood volume:** The dual-energy CT can measure blood volume in a tumor or lymph node earlier in the course of treatment to see if chemotherapy and radiation are working. This potentially crucial information can be obtained without increasing the amount of radiation or contrast dye. Blood volume may provide information that will allow physicians to determine which patients are responding well and which might benefit from surgery or need increases in radiation or chemotherapy.

  If they find that the use of this technology can more effectively monitor responses, Sher plans to develop a national protocol to test it on larger numbers of patients.
Rush is among the first medical centers in the country to use an approach called clinical program redesign to streamline care, improve outcomes and reduce costs. This approach combines data analysis with multidisciplinary face-to-face discussions to drive process changes that improve outcomes.

_Pictured above (from left to right): Thoracic surgeons Michael Liptay, MD, and Gary Chmielewski, MD, have collaborated with others at Rush to implement changes leading to positive outcomes._
“We continue to ask the question: ‘Can we do better than ourselves?’”

Michael Liptay, MD, thoracic surgeon

FINDING WHAT WORKS AND MAKING IT THE STANDARD OF CARE

By fine-tuning their approaches to make patient care even more efficient and effective, the care teams at Rush can get patients on the road to recovery, out of the hospital and back to their lives as quickly and safely as possible.

- **The process:** According to David Ansell, MD, chief medical officer at Rush, here’s how the clinical program redesign process works:
  - Physician-led multidisciplinary teams examine quality metrics to spotlight areas that need improvement, such as complication rates and postoperative mortality.
  - The team discusses what care processes might be changed to bring about improvement, such as removing catheters or beginning patient ambulation sooner.
  - In the process, the team often decides to reduce or eliminate routine tests and procedures, such as frequent blood draws, that offer no evidence of patient benefit.
  - After implementing changes, they measure the effects, and successful processes become the new standard of care. The standards appear as new defaults on the order sets in the electronic medical record system.

- **Raising the quality bar:** “This mindful approach to data has been used in several programs in the Rush University Cancer Center,” Ansell says. “It has helped us raise already high-quality care to an even higher level. And it has also reduced costs.” Within the next few years, all of the Rush cancer programs plan to implement clinical program redesign, which is part of a Rush-wide initiative.

THORACIC SURGERY SUCCESSES

Several programs at Rush have instituted clinical program redesign. These programs include colon and rectal surgery, bone marrow transplant and thoracic surgery.

- **Reducing length of stay and mortality:** Length of stay and readmission rates for thoracic surgery were already lower than University HealthSystem Consortium (UHC) averages when thoracic surgeon Michael Liptay, MD, and his team began clinical program redesign. Even so, Liptay says, “We continue to ask the question: ‘Can we do better than ourselves?’”

  And so the health care team decided to look at how they might improve their own numbers.

**Changes:**
- Removed patients’ chest tubes on day one.
- When deemed clinically safe, encouraged patients to walk every six hours after surgery.
- Rounded sooner and more frequently with patients postoperatively to recognize and treat complications at an earlier, less critical stage.

**Outcomes:**
- Length of stay in fiscal year 2013 dropped to 3.5 days, below the UHC average of five days for lobectomy.
- For lobectomy, they achieved the lowest postoperative mortality rate (0.7 percent) among Society of Thoracic Surgeons’ general thoracic surgery database participants. The national mortality rate was 1.4 percent.
In her years at Rush, Melody Cobleigh, MD, has played a pivotal role researching treatments that have saved the lives of thousands of breast cancer patients. A graduate of Rush Medical College, Cobleigh returned to Rush in 1989 to work with breast oncologist Janet Wolter, MD, who had been her mentor during her internal medicine residency.

Along with Wolter, Cobleigh was co-investigator on the multinational trials of trastuzumab (Herceptin), which revolutionized the treatment of breast cancer in 1998, when it became the first monoclonal antibody to receive FDA approval.

Director of medical oncology at Rush, Cobleigh is soft-spoken and self-effacing, despite scores of published papers demonstrating her scientific rigor in pursuit of better and gentler breast cancer treatments, and her leadership in organizations such as the American Society of Clinical Oncology, the Eastern Cooperative Oncology Group, and the National Surgical Adjuvant Breast and Bowel Project. She is devoted to the patients she cares for in the clinic, who hold her in the highest regard, according to her colleague, breast oncologist Ruta D. Rao, MD, director of The Coleman Foundation Comprehensive Breast Cancer Clinic.

Rao recently sat down with Cobleigh, who was her mentor, to discuss Cobleigh’s medical career.

Pictured above: Medical oncologist Melody Cobleigh, MD (left), is the Brian Piccolo Professor for Cancer Research at Rush Medical College. She and Ruta Rao, MD, also a breast oncologist, collaborate to bring the latest cancer therapies to patients at Rush through The Coleman Foundation Comprehensive Breast Cancer Clinic.
“It’s wonderful taking care of patients but it’s also extremely exciting to contribute to the body of knowledge that advances medicine.”

Melody Cobleigh, MD, breast oncologist

**Rao:** It’s been my honor and pleasure to work with you as my mentor. I couldn’t have asked for a better person, and I’m excited to have this opportunity to ask you some questions. First of all, how did you decide to choose medicine as your career?

**Cobleigh:** After I finished college, I was a graduate assistant in psychology, a job I didn’t like. And I asked myself, “How can I find a job that’s interesting, where I help people, make a good living and am my own boss?” And I thought being a doctor is one of those jobs, so that was it. Well, actually, there’s a little more to the story. I always liked a TV program, “Marcus Welby, MD.” He was a general practitioner. And you never really saw him in the hospital, he was always sitting at someone’s house, having a cup of coffee, talking with families. And I said, “That is what I want to do.”

**Rao:** Do you feel that the reasons that you went into it were satisfied by the career that you’ve had?

**Cobleigh:** Three of the four. It’s an interesting job, I’ve helped people, and I’ve made a good living. But I’ve never been my own boss.

**Rao:** Once you went into medicine, how did you decide to go into medical oncology?

**Cobleigh:** I started out wanting to be a surgeon. But I graduated from Rush Medical College mid-year, and residencies didn’t start until summer. The chairman of medicine said, “We’ll make you a six-month sub-intern,” which meant internal medicine. And I think he knew I would get hooked on internal medicine. I realized I didn’t want to be a consultant, called in once or twice, but again, like Marcus Welby, I wanted to get to know the patient and family, so that made medical oncology appealing.

**Rao:** Once you became a medical oncologist, what brought you to the field of breast cancer in particular?

**Cobleigh:** Dr. Janet Wolter (professor emerita of medicine at Rush and one of its first medical oncologists). She’s such a wonderful, warm person. She was kind of a female Marcus Welby. She’s just an all around good egg: a very intelligent person, a very kind person and a very selfless person.

**Rao:** So I think that leads to my next question: Who most influenced you in your career?

**Cobleigh:** That would be Dr. Wolter, of course. She was a superstar. Not only was she a wonderful doctor, she was involved in the design of some of the very first adjuvant chemotherapy trials in breast cancer. She became involved early on in two national cooperative groups for clinical trials, the Eastern Cooperative Oncology Group (ECOG) and the National Surgical Adjuvant Breast and Bowel Project (NSABP), which was started in 1958 by a surgeon. When Janet came into oncology in 1964, the initial clinical trials were mainly surgical trials: comparing mastectomy with or without axillary resection, for instance. She was there when these two groups decided to collaborate. The meeting was small, about a dozen when they collaborated on the first trial.

Their biggest concern was that American and Canadian women would not accept a medication that would make their hair fall out. So they started with the drug L-phenylalanine mustard, or L-PAM, because it did not cause hair loss. And the drug turned out to significantly reduce the risk of recurrence in breast cancer patients with positive lymph nodes.

**Rao:** Can you tell me a little bit about how The Coleman Foundation Comprehensive Breast Cancer Clinic came about?

**Cobleigh:** Yes, it was started in 1985 by Janet Wolter, and Frank Hendrickson, MD, who was then chairman of radiation oncology, and surgeon Thomas Witt, MD. Another radiation oncologist who was involved was Anantha Murthy, MD.

Cancer care was becoming multidisciplinary, because chemotherapy was just starting to be administered. And they were talking one day and said, “We really ought to see patients together.” And Steve Economou, MD, chairman of surgery at the time, supported the idea. So we had the chairman of surgery and the chairman of radiation oncology behind the concept. And even though she wasn’t a chair, Janet was a tour de force from internal medicine.
It was the first center of its kind in the Midwest, and it's still a unique center. There may be places that say they have a comprehensive center, but not everybody actually gets together as a multidisciplinary group and sees the patient, talks to and examines the patient, and formulates a joint decision, the way we do here. Many of them are just conferences, where the case is presented but the patient is not there. As you well know, seeing a patient and hearing about a patient are two entirely different things.

**Rao:** I'd like to talk about your career. If you could pick one, what would you say has been the most exciting moment of your career?

**Cobleigh:** That would have to be when we started treating patients with Herceptin, and we realized it was a breakthrough.

I started practice in 1982, the year that the first paper was published on the use of tamoxifen as an adjuvant treatment. Chemotherapy was being used, but most of the trials were negative, and we wondered if there was ever going to be an advance. And then came Herceptin.

At the time, they couldn’t get investigators interested in the early trials, because Herceptin was a monoclonal antibody that interferes with the HER2-neu receptor on cells, not a typical chemotherapy drug. We were afraid those trials were not going to be completed. Because Janet Wolter had a background in endocrinology, she understood the drug’s potential. She was the PI for the original Herceptin trials, testing it in women with metastatic breast cancer.

The response was astounding. As you know, one of the places breast cancer spreads is to the lymph nodes in the neck and near the collarbones. Women would come in with large masses in their necks and after taking Herceptin, the masses just started “melting” almost immediately. For people who respond to Herceptin either as a single agent or in combination with chemotherapy, it’s like a “lights out” phenomenon, it’s very quick.

At the time, we were seeing patients every week. I remember patients coming into my office saying, “Look, it’s shrunk since last week.” Patients were in the treatment room, talking to each other, feeling each other’s necks. And at my weekly lunch with Janet, I said, “You know, I think this stuff works.” And then the next week, she said, “I’ve seen it, too.” That was really something.

**Rao:** I remember a patient who I started treating when I was a fellow. And she was close to death at our first new patient visit with you. And I remember how, with the Herceptin treatment, you basically brought her back to life within a matter of weeks. So I can’t imagine what it must have been like when you were involved in the clinical trials. Before you even knew if the drug was going to work or not.

**Cobleigh:** I remember one other patient who was very, very ill. She was in the randomized trial. And her disease was progressing rapidly. We were able to unblind her and get her on the drug instead of the placebo she’d been taking. She recovered, and a month later, she was scuba diving on vacation with her son.

Women got wind of the fact that this was working and wanted to try it. So the drug company actually changed the design of the trial so that people in the control group whose disease progressed could then go on the drug if they had been on the control arm and therefore did not get it at the beginning of their treatment in the randomized trial.

**Rao:** That must have been amazing.

**Cobleigh:** Yes, it was. And another amazing thing is seeing the very long-term survivors from those original trials. In fact, I just saw one yesterday. She’s had her 20th anniversary.

Janet and I were authors on some of those pivotal papers. I’m the first author on the phase II trial studies published in the *Journal of Clinical Oncology* in 1998. Janet was co-author of the pivotal article on the phase III trials in the *New England Journal of Medicine* in 2001, which led to FDA approval.

When Herceptin was approved in 1998, it was the first therapeutic antibody targeted to a specific cancer-related molecular marker to receive FDA approval.

The next big leap was the adjuvant trial. There was a frustrating three-year period when we knew it was a great drug, but the adjuvant trials were still being designed.

When the trials opened, in 2001, we gladly participated. We had the experience with the drug, and we were not afraid to use it. In 2005, the drug was finally approved as adjuvant treatment, and it cut the risk of recurrence by 50 percent compared with standard adjuvant therapy.

**Rao:** What has been your favorite part of your job so far?

**Cobleigh:** I think my favorite part of my job has really been getting to know patients and their families.
Rao: What has surprised you the most about working with breast cancer patients?

Cobleigh: I have been surprised and impressed by patients’ courage. And the fact that people can have so much wrong with them and still want to press on with their normal lives. As you know, we offer to sign authorizations for people to go on disability when they have metastatic disease and they know they’re going to die. And what do they say? They say, “I want to keep working.”

It’s also been interesting to watch people change their lives because they realize — as we all should realize — that life is limited. I’ve seen people who really were unhappy in their marriages get divorced. I’ve seen people get married. And I’ve seen people change jobs. And I love seeing the little things that really come to the fore. Birthdays and graduations and all of those things become so much more important to people when they’ve faced serious illness.

Rao: I know clinical research is one of your passions. What are the most interesting or promising studies that you’re involved in today?

Cobleigh: There’s a new and improved Herceptin called TDM-1, which consists of a chemotherapy drug fused to Herceptin. I was the PI for those original trials at Rush. It has the advantage of combining the chemotherapy with Herceptin without the toxicity of chemotherapy. It’s designed to dissolve cancer cells from within and leaves normal cells alone. So it’s meant to be very kind and gentle on the patients — we’ve observed no hair loss, no nausea, no vomiting. It’s exciting because even HER2-positive patients who had stopped responding to regular Herceptin respond to this TDM-1. This drug was approved by the FDA in 2013 for treatment of metastatic HER2-positive breast cancer. We are fortunate to be the only center in Chicago to study it in the adjuvant setting as part of an international study, NSABP B50-I.

There’s also an international trial called B43, under the auspices of the NSABP. It’s looking at Herceptin in noninvasive breast cancer. I’m the international PI for that trial, and we are close to our accrual goal for patients. We’ve processed nearly 8,000 specimens at Rush for patients who’ve entered the trial.

And I’m excited by the clinical trial you’re doing, the one in which you’re the principal investigator of the drug called palbociclib. It could be a breakthrough in estrogen receptor-positive, HER2-negative breast cancer. As you know, when you combine this with an anti-estrogen therapy, we’re seeing huge improvements — as much as a year — in progression-free survival in women with metastatic breast cancer. Your trial is for patients whose disease has already progressed on one anti-estrogen treatment. It’s very, very exciting.

Rao: Yes, it is. What do you think are the biggest challenges facing clinical researchers today?

Cobleigh: Funding is number one. Funding over the last 10 years from the National Institutes of Health for clinical cancer research — studies of new drugs in patients — has been flat. And yet the cost of conducting clinical trials has increased with inflation and increasing regulation. That’s a huge challenge. Another challenge in breast cancer is that we’re doing so well, we’re curing 80 percent of the people who walk in the door. But the 20 percent who recur are the cases we need to study. To actually be able to detect a difference with new drugs, we need enormous trials. And that’s very expensive.

Another huge challenge is going to be using the information that’s coming out of the ability to sequence individual tumors. We’re going to find that maybe only a half a percent of patients with breast cancer benefit from a particular drug. Well, how will we develop drugs for such small groups? So there are challenges but there are also huge opportunities.

Rao: What would be your advice to younger oncologists entering the field today?

Cobleigh: I would advise young oncologists to participate in cancer research. It’s wonderful taking care of patients but it’s also extremely exciting to contribute to the body of knowledge that advances medicine.

Rao: On a more personal note, what would be your advice to younger female physicians trying to balance work and family life? Because I know you have been able to do that successfully.

Cobleigh: You need to have a good partner at home. That’s the key. As long as you’re a team, then it works.

Rao: I have one last question. What would you like your legacy to be?

Cobleigh: I’m not planning to retire any time soon. There’s too much work to be done, as we’ve just been discussing. But I guess I’d like my legacy to be simply the next generation of physicians, like you. And maybe that I helped a few families through a difficult time.
The Rush University Cancer Center comprises all cancer-related clinical, research and educational efforts at Rush, crossing 20 departments, divisions and sections; inpatient and outpatient areas; professional clinical activities; and the colleges of Rush University.

**SUPPORT SERVICES**

Rush is committed to helping patients and their families cope with cancer’s psychological, emotional and spiritual effects. These support services are at Rush:

- An American Cancer Society patient navigator who meets with patients and families to provide vital support, including information about available treatments, programs and community services
- The Cancer Integrative Medicine Program, through which patients have access to complementary therapies — such as psychotherapy and nutritional counseling, massage therapy, yoga and acupuncture — that promote their well-being and help maintain their quality of life
- A palliative and supportive care program that offers distress screening, pain management and many other services
- Survivorship services for lymphoma and breast cancer survivors

**RESIDENCY AND FELLOWSHIP PROGRAMS**

- Residency in radiation oncology
- Residency in nuclear medicine
- Residency in pharmacy
- Fellowship in hematology/medical oncology
- Fellowship in orthopedic oncology
- Fellowship in hospice and palliative medicine

**ADVANCING MEDICINE THROUGH RESEARCH**

The Rush University Cancer Center fosters research across four broad programs that aim to deepen our understanding of cancer to better prevent, detect and treat it:

- Cancer biology
- Clinical, behavioral and translational research
- Molecular signatures and cancer outcomes
- Tumor immunology

**INFUSION CENTERS**

Rush patients have access to three infusion centers, which are staffed with certified, experienced oncology nurses:

- Rush University Medical Center (48 chairs) - Chicago
- Rush Oak Park Hospital (nine chairs) - Oak Park, Ill.
- DuPage Medical Group (19 chairs) - Lisle, Ill.

**RECOGNITION AND ACCREDITATIONS**

- Rush has received three consecutive outstanding achievement awards from the Commission on Cancer of the American College of Surgeons.
- The Coleman Foundation Blood and Bone Marrow Transplantation Clinic is accredited by the Foundation for the Accreditation of Cellular Therapy.
- Rush's pathology and clinical laboratories are accredited by the Joint Commission.

**RUSH CANCER NETWORK**

1. Rush University Medical Center
   Chicago
2. Rush Oak Park Hospital
   Oak Park, Ill.
3. Rush Copley Medical Center
   Aurora, Ill.
4. Swedish Covenant Hospital
   Chicago
5. DuPage Medical Group
   DuPage County
6. Riverside Medical Center
   Kankakee, Ill.
7. Pronger Smith Medical Associates
   Tinley Park, Ill.

* Sites affiliated with Rush's cancer program that remain separate and independent with respect to professional judgment and liability.
The comprehensive clinics are dedicated to the following:

- Blood and bone marrow transplants
- Brain cancer
- Breast cancer
- Chest and lung tumors
- Gastrointestinal cancers
- Gynecologic cancers
- Head and neck cancers
- Inherited susceptibility to cancer
- Leukemia
- Lymphoma
- Melanoma and soft tissue tumors
- Multiple myeloma
- Myelodysplastic/myeloproliferative neoplasms
- Prostate cancer
- Sarcomas
- Spine tumors

Rush, which serves both adults and children with cancer, is home to The Coleman Foundation comprehensive clinics. In these multidisciplinary clinics, a team approach is applied to patient care. The clinical team gathers to discuss the patient’s condition, review diagnostic tests and develop a treatment plan, often in collaboration with the patient’s diagnosing physician.

The comprehensive clinics are dedicated to the following:

- Blood and bone marrow transplants
- Brain cancer
- Breast cancer
- Chest and lung tumors
- Gastrointestinal cancers
- Gynecologic cancers
- Head and neck cancers
- Inherited susceptibility to cancer
- Leukemia
- Lymphoma
- Melanoma and soft tissue tumors
- Multiple myeloma
- Myelodysplastic/myeloproliferative neoplasms
- Prostate cancer
- Sarcomas
- Spine tumors

For more information about cancer programs at Rush or to refer a patient for an initial visit or a second opinion, please call (312) CANCER-1 (226-2371).

For information about open clinical trials, visit www.rush.edu/cancerclinicaltrials.
## Disease Site Programs

### Breast Cancer

**Clinical Specialists**
- Diagnostic radiologists: Anne Cardwell, MD; Carol Corbridge, MD; Janice Dieschbourg, MD; Mireya Dondalski, MD; Peter Jokich, MD; Gene Solmos, MD; Lisa Stempel, MD
- Medical oncologists: Melody Cobleigh, MD; Katherine Kabaker, MD; Ruta Rao, MD; Lydia Usha, MD
- Pathologists: Paolo Gattuso, MD; Ritu Ghai, MD
- Plastic and reconstructive specialists: John Cook, MD; Gordon Derman, MD; George Kouris, MD; Norman Weinzweig, MD
- Radiation oncologist: Katherine Griem, MD

**Breast Tumor Conference**
- Mondays, 4 to 5 p.m.
- Janet Wolter, MD, Clinical and Educational Conference Room 1010 Professional Building

### Gastrointestinal Cancers

**Clinical Specialists**
- Colorectal surgeons: Marc Brand, MD; Bruce Orkin, MD; Joanne Favuzza, DO
- Gastroenterologists: A. Azz Aadam, MD; Salina Lee, MD; John Losurdo, MD; Joshua Melson, MD; Sohrab Mobarhan, MD
- General surgeons: Daniel Deziel, MD; Minh Luu, MD; Keith Millikan, MD; Jonathan Myers, MD
- Interventional radiologists: Bulent Arslan, MD; Allen T. Chen, MD; Jayesh Soni, MD; Ulku Cenk Turba, MD
- Medical oncologists: Mary Jo Fidler, MD; Marisa Hill, MD; William Leslie, MD
- Pathologist: Shriram Jakate, MD
- Radiologist: John Hibbeln, MD
- Thoracic surgeons: Gary Chmielewski, MD; Michael Liptay, MD; Christopher W. Seder, MD; William Warren, MD
- Transplant hepatologists: Eric Cohen, MD; Sheila Eswaran, MD; Nikunj N. Shah, MD
- Transplant surgeons: Edie Chan, MD; Sameh Fayek, MD; Martin Hertl, MD; Edward Hollinger, MD, PhD; Stephen Jensik, MD; Dolamu Olaitan, MD

**Gastrointestinal Tumor Conference**
- Tuesdays, 12:30 to 1:30 p.m.
- Janet Wolter, MD, Clinical and Educational Conference Room 1010 Professional Building

### Genitourinary Cancers

**Clinical Specialists**
- Medical oncologists: John Showel, MD; Nicklas Pfanzelter, MD
- Nephrologists: Jochen Reiser, MD; Samuel Saltzberg, MD
- Radiation oncologists: David Sher, MD, MPH; Dian Wang, MD, PhD
- Urologists: Christopher Coogan, MD; Leslie Deane, MBBS; Shahid Ekbal, MD; Lev Elterman, MD; Jerome Hoeksema, MD; Kalyan Latchamsetty, MD; Laurence Levine, MD; Charles Mckiel Jr., MD; Ajay Nehra, MD; Dennis Pessis, MD

**Genitourinary Tumor Conference**
- Last Tuesday of the month, 7 to 8 a.m.
- Neurosurgery Conference Room 1115 Professional Building

### Endocrine Cancers

**Clinical Specialists**
- Endocrine surgeon: Katy Heiden, MD
- Endocrinologists: David Baldwin, MD; Tiffany Hor, MD; Brian Kim, MD; Chung Kay Koh, MD; Srimon Neurakul, MD; Kristina Todorova-Koteva, MD

**Endocrine Tumor Conference**
- Every other Tuesday, 8 to 9 a.m.
- Location varies

### Gynecologic Cancers

**Clinical Specialists**
- Gynecologic oncologists: Summer Dewdney, MD; Alfred Guirguis, DO; Jacob Rotmensh, MD
- Medical oncologist: Lydia Usha, MD
- Pathologists: Pincas Bitterman, MD; Ritu Ghai, MD
- Radiation oncologist: Jessica Zhou, MD

**Gynecologic Tumor Conference**
- Fridays, 7 to 8 a.m.
- Pathology Conference Room 562 Jelke Building

### Head and Neck Cancers

**Clinical Specialists**
- Medical oncologists: Mary Jo Fidler, MD; John Showel, MD
- Neurosurgeons: Richard Byrne, MD; Roham Moftakhar, MD; Lorenzo Munoz, MD
Neuroradiologist: Miral Jhaveri, MD

Neurotologist: R. Mark Wiet, MD

Otorhinolaryngologists/head and neck surgeons:
Samer Al-Khudari, MD; Joseph Allegretti, MD; Pete Batra, MD; David Caldarrelli, MD; Paul J. Jones, MD; Philip LoSavio, MD; Andrew Lerrick, MD; Thomas Nielsen, MD

Plastic and reconstructive specialists: Gordon Derman, MD; George Kouris, MD

Radiation oncologists: Aidnag Diaz, MD, MPH; David Sher, MD, MPH

Head and Neck Tumor Conference
First and third Wednesdays, 7 to 8 a.m.
Janet Wolter, MD, Clinical and Educational Conference Room
1010 Professional Building

HEMATOLOGIC CANCERS

Clinical Specialists
Dermatologist: Warren Piette, MD
Geneticist: Wei-Tong Hsu, MD
Hematologist/oncologists:
Lisa Boggio, MD; Irene Dehghan-Paz, MD; Sefer Gezer, MD; Stephanie Gregory, MD; Reem Karmali, MD; Melissa Larson, MD; Agne Paner, MD; Jamile Shammo, MD; Parameswaran Venugopal, MD
Hematopathologists:
Jerome Loew, MD; Brett Mahon, MD; Ira Miller, MD
Palliative medicine specialist:
Elaine Chen, MD
Pathologists:
Paola Gattuso, MD; Rita Ghai, MD; Mark Pool, MD
Pulmonary and critical care medicine specialists:
Robert Balk, MD; Elaine Chen, MD; Michael Silver, MD; Betty Tran, MD, MS; Mark Yoder, MD
Radiation oncologist:
David Sher, MD, MPH
Thoracic radiologist:
Palmi Shah, MD

LUNG AND THORACIC CANCERS

Clinical Specialists
Dermatologist: Jeffrey Altman, MD; Lady Dy, MD; James Ertle, MD; Sheetal Mehta, MD; Marianne O’Donoghue, MD; Warren Piette, MD; Arthur Rhodes, MD, MPH; Michael Tharp, MD
Dermatopathologist:
Lady Dy, MD; Vijaya Reddy, MD
Diagnostic radiologist:
Joy Sclamberg, MD
Immunologists:
Amanda Marzo, PhD; Carl Ruby, PhD; Andrew Zloza, MD, PhD
Medical oncologist:
Nicklas Pfanzelter, MD
Neurosurgeon:
Lorenzo Muñoz, MD
Ophthalmologist:
Adam Cohen, MD; Tamara Fountain, MD
Plastic and reconstructive specialist:
Gordon Derman, MD
Radiation oncologist:
Ross Abrams, MD
Stem cell transplantation specialists:
Antonio Jimenez, MD; John Maciejewski, MD, PhD; Sunita Nathan, MD
Surgical oncologists:
Steven Bines, MD; Keith Monson, MD

For more information about cancer programs at Rush or to refer a patient for an initial visit or a second opinion, please call (312) CANCER-1 (226-2371).
Clinical Specialists

Neuro-oncologists:
Robert Aiken, MD; Nina A. Paleologos, MD

Neuropathologist:
Sukriti Nag, MD, PhD

Neuroradiologists:
Sharon Byrd, MD; Miral Jhaveri, MD;
Mehmet Kocak, MD

Neurosurgeons:
Richard Byrne, MD; Roham Moftakhar, MD;
Lorenzo Muñoz, MD; John O’Toole, MD

Neurotologist:
R. Mark Wiet, MD

Pediatric hematologist/oncologist:
Paul Kent, MD

Radiation oncologist:
Aidnag Diaz, MD, MPH

Brain Tumor Conference
Tuesdays, 11:30 a.m. to 12:30 p.m.
Janet Wolter, MD, Clinical and Educational Conference Room
1010 Professional Building

Spine Tumor Conference
Thursdays, 9 a.m. to noon
Woman’s Board Cancer Treatment Center
500 S. Paulina St.

For information about open clinical trials, visit www.rush.edu/cancerclinicaltrials.


### 2012 CANCER REGISTRY REPORT

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<thead>
<tr>
<th>PRIMARY_SITE</th>
<th>TOTAL</th>
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<th>NONANALYTIC</th>
<th>MALE</th>
<th>FEMALE</th>
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</table>

**TOTAL** | **3,037** | **2,479** | **558** | **1,262** | **1,775**

*Analytic: Cases diagnosed and/or received all or part of first course of care at Rush University Medical Center.*

*Nonanalytic: Cases diagnosed and all first course treatment completed elsewhere.*
NEW CANCER INCIDENCE BY FIRST CONTACT YEAR, 2008 - 2012

![Graph showing cancer incidence by first contact year from 2008 to 2012.](image)

ANALYTIC CASE DISTRIBUTION BY GENDER AND AGE AT DIAGNOSIS, 2012

![Pie chart showing analytic case distribution by gender and age at diagnosis in 2012.](image)

TOP 10 NATIONAL ANALYTIC SITES, 2012

![Bar chart showing top 10 national analytic sites in 2012.](image)

Note: The graph compares USA data with that from Rush for the top 10 national analytic sites.

TOP 5 RUSH ANALYTIC SITES, 2012

![Bar chart showing top 5 Rush analytic sites in 2012.](image)

Note: Data is based on stage as defined by the American Joint Committee on Cancer (AJCC).
### COLORECTAL MEASURE RESULTS, 2011

<table>
<thead>
<tr>
<th>MEASURES</th>
<th>DEFINITION</th>
<th>COMMISSION ON CANCER THRESHOLD</th>
<th>2011</th>
<th>CASE REVIEW</th>
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<tr>
<td>Colon Measure Accountability</td>
<td>Adjuvant chemotherapy is considered or administered within four months (120 days) of diagnosis for patients under the age of 80 with American Joint Commission on Cancer (AJCC) stage III (lymph node positive) colon cancer. [ACT]</td>
<td>90%</td>
<td>100%</td>
<td>ACT</td>
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<td>Colon Measure Improvement</td>
<td>At least 12 regional lymph nodes are removed and pathologically examined for resected colon cancer. [12RLN]</td>
<td>80%</td>
<td>100%</td>
<td>12 RLN</td>
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<td>Rectal Surveillance</td>
<td>Radiation therapy is considered or administered within six months (180 days) of diagnosis for patients under the age of 80 of with clinical or pathologic AJCC T4N0M0 or stage III receiving surgical resection for rectal cancer. [AdjRT]</td>
<td>90%</td>
<td>90%</td>
<td>ADJ RT</td>
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- Reached or exceeded Commission on Cancer benchmark.
- ACT = adjuvant chemotherapy; RLN = regional lymph nodes; AdjRT = adjuvant radiation therapy.

### BREAST MEASURE RESULTS, 2011

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<th>COMMISSION ON CANCER THRESHOLD</th>
<th>2011</th>
<th>CASE REVIEW</th>
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<tr>
<td>Breast Accountability</td>
<td>Radiation therapy is administered within one year (365 days) of diagnosis for women under age 70 receiving breast-conserving surgery for breast cancer. [BCS/RT]</td>
<td>90%</td>
<td>93.7%</td>
<td>BCS</td>
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<tr>
<td>Breast Accountability</td>
<td>Combination chemotherapy is considered or administered within four months (120 days) of diagnosis for women under 70 with (AJCC) T1cN0, or stage IB-III hormone receptor negative breast cancer. [MAC]</td>
<td>90%</td>
<td>97.5%</td>
<td>MAC</td>
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<tr>
<td>Breast Accountability</td>
<td>Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1c or stage IB-II hormone receptor positive breast cancer. [HT]</td>
<td>90%</td>
<td>94.3%</td>
<td>HT</td>
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</table>

- Reached or exceeded Commission on Cancer benchmark.
- BCS = breast-conserving surgery; RT = radiation therapy; American Joint Commission on Cancer = AJCC; MAC = multi-agent chemotherapy; HT = hormone therapy.
OBSERVED SURVIVAL FOR LUNG CASES DIAGNOSED, 2003 - 2006

Stage 1
- Rush: n=151
- National: n=77,276

Stage 2
- Rush: n=57
- National: n=26,440

Stage 3
- Rush: n=212
- National: n=112,500

Stage 4
- Rush: n=307
- National: n=189,008

CANCER MORTALITY (INPATIENT) AT RUSH, FY13*

<table>
<thead>
<tr>
<th>Service</th>
<th>Actual Mortality Rate</th>
<th>Predicated Mortality Rate</th>
<th>Predicated Mortality Rate</th>
<th>Compared with top cancer hospitals (US News)**</th>
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<td>Surgical Oncology</td>
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<td>2.01</td>
<td>2.01</td>
<td>9th out of 19</td>
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<td>Medical Oncology</td>
<td>1.71</td>
<td>2.21</td>
<td>2.21</td>
<td>6th out of 19</td>
</tr>
<tr>
<td>Bone Marrow Transplant</td>
<td>2.56</td>
<td>1.96</td>
<td>1.96</td>
<td>18th out of 19</td>
</tr>
</tbody>
</table>

* Actual mortality = number of deaths per 100 discharges; predicted mortality = deaths expected based on how sick the patients are, per 100 discharges; mortality index = actual rate/predicted rate (index <1 means fewer patients died than predicted).

** Comparison is with hospitals ranked in the top 20 by US News & World Report, which ranks hospitals based on a number of different measures including in-hospital mortality (Rush is not ranked in this list; of the top 20, one hospital does not submit data to the University HealthSystem Consortium [UHC]).

Source: University HealthSystem Consortium clinical database, FY 2013 data.
The Rush University Cancer Center comprises all of the cancer-related clinical, research and educational efforts at Rush, crossing 20 departments, divisions and sections; inpatient and outpatient areas; professional clinical activities; and the colleges of Rush University.

For more information about cancer programs at Rush or to refer a patient for an initial visit or a second opinion, please call **(312) CANCER-1 (226-2371)**.