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CONQUEST

WHERE CHANGE BEGINS

Patients benefit
from quality
improvement

THE UNIVERSITY OF TEXAS

MD Anderson
Cancer Center

Making Cancer History®

MISSION

The mission of The University of Texas MD Anderson Cancer Center is to eliminate cancer in Texas, the nation, and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.

VISION

We shall be the premier cancer center in the world, based on the excellence of our people, our research-driven patient care and our science.

We are Making Cancer History®.

CORE VALUES

Caring

By our words and actions, we create a caring environment for everyone.

Integrity

We work together to merit the trust of our colleagues and those we serve.

Discovery

We embrace creativity and seek new knowledge.



On the cover: As director of Process Improvement and Quality Education, Doris Quinn, Ph.D., leads a team that seeks solutions to inefficiencies, from linen shortages to long patient wait times.

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CONTENTS

CONQUEST SUMMER 2012

Departments

2 FRONTLINE

Common cancer drug could eliminate morphine tolerance

Finding new ways to fight cancer's resilience

Genomic instability allows cancer to advance

Protein regulation pathway linked to poor prognosis in breast cancer

Hybrid breast cancer vaccine shows promise

Two drugs reduce Ewing's sarcoma tumors

Connection between platelet count and cancer

Drug shrinks melanoma brain metastases

20 PICTURE THIS

Beauty/Barber Shop

28 CANCER BRIEFINGS

AT&T supports telesurgery program

Acupuncture for dry mouth

30 SIGNS OF HOPE: COLLAGE

Art and story can restore a feeling of individuality

32 JAMEISHA BROWN

Burkitt's lymphoma opens career path for teen



Features

6 WHERE CHANGE BEGINS

Patients benefit from quality improvement

Nurses, educators and others skilled at mapping out work processes team up to help front-line employees and their managers find solutions to problems.

12 GREEN MEDICINE

Balancing a global cause with global concerns

Upholding standards of care while minimizing environmental impact is something that MD Anderson has embraced. Being an international leader in cancer care comes with tremendous responsibility to patients, to science and to the planet.

14 GOING THE DISTANCE

Regional expansion extends MD Anderson's mission

A regional concept launched in 1999 has expanded to make radiation therapy, and medical and surgical oncology services more available to patients closer to where they live.

18 WHEN LIFE IS GOOD

Symptom burden lifted for rare blood cancer

While it's not a cure, a drug has alleviated side effects and significantly improved outcomes for patients coping with myelofibrosis, a disease for which there has been no therapy.

22 PRACTICE MAKES PERFECT

High-tech simulation prepares medical providers

Today's doctors, nurses and other health care providers can learn and build their skills through a variety of high-tech simulators.

24 A 'WHOLE' IN ONE CENTER

Integrative medicine addresses each patient's physical, mind-spiritual and social health

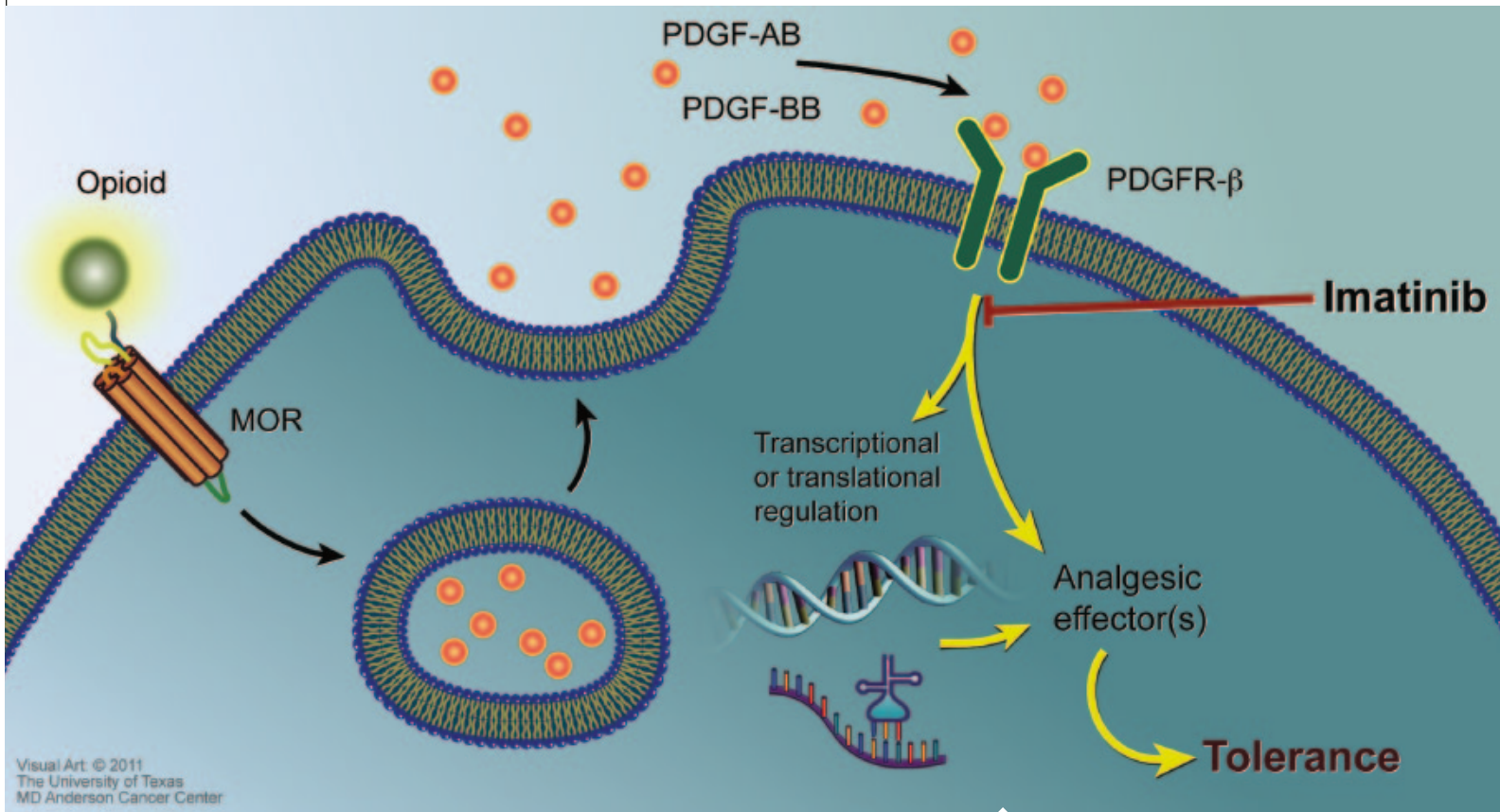
MD Anderson treats the whole patient, offering integrative modalities, such as massage therapy, music therapy, acupuncture, meditation and clinical nutrition support. The program also includes research and education initiatives.

26 WHEN THE PIPELINE DRIES UP

Pharmacists help counter drug shortages

MD Anderson works proactively to ensure that the institution has the right drugs at the right time, despite national shortages.

FRONTLINE



THERE'S HOPE FOR PATIENTS WITH CHRONIC PAIN

Commonly used cancer drug eliminates morphine tolerance

Seeing children endure chronic pain associated with cancer treatment inspired Howard Gutstein, M.D., professor in MD Anderson's Department of Anesthesiology and Perioperative Medicine and Department of Biochemistry and Molecular Biology, to focus his research on pain management. Specifically, he wanted to find the cause of morphine tolerance, which develops over time and makes the drug ineffective for pain relief.

"If I could understand what causes morphine tolerance, I'd finally be able to treat these patients' pain effectively and alleviate their suffering," Gutstein says. He discovered the key to understanding morphine tolerance may be a cancer drug already in clinical use.

Gutstein and his colleagues found that the cellular process that causes morphine tolerance can be blocked by a reformulated form of imatinib, a drug commonly used to treat certain kinds of leukemia and gastrointestinal tumors. Since imatinib, known by the brand name Gleevec®, is already approved for use in humans, Gutstein hopes soon to translate his findings on the reformulation of the drug through animal studies and Phase I trials in humans.

"We may be able to quickly translate this discovery and dramatically reduce the suffering endured by the sickest patients, and not just those with cancer," Gutstein says.

Blocking tolerance would make lower doses of morphine more effective, also reducing undesirable side effects associated with it, including itchiness, nausea and difficulty breathing.

REPORTED IN THE FEBRUARY 2012 EDITION OF NATURE MEDICINE.

How Gleevec® blocks morphine tolerance:

Opioid drugs, such as morphine, bind to the mu opioid receptor (MOR) on the surface of nerve cells. This process stimulates the release of platelet-derived growth factors (PDGF-AB and BB) from the cell. These growth factors then bind to the beta-isoform of the platelet-derived growth factor receptor (PDGFR-b). Activating this receptor causes tolerance to develop. Gleevec® (imatinib) blocks activation of the PDGFR-b. This stops tolerance from occurring and reverses pre-existing tolerance.

FINDING NEW WAYS TO FIGHT CANCER'S RESILIENCE

Blocking telomerase kills cancer cells, but opens new paths for disease progression

Understanding the “what” and “how” of telomerase may be critical in treating and eliminating cancer. Telomerase is the enzyme that adds DNA sequence repeats (“TTAGGG” in all vertebrates) to the ends of telomere regions, thereby rescuing malignant cells from destruction in telomere crisis.

New research in mouse models with lymphoma shows that inhibiting telomerase kills tumor cells, but triggers resistant pathways that allow cancer to survive and spread.

“Telomerase is overexpressed in many advanced cancers, but assessing its potential as a therapeutic target requires us to understand what it does and how it does it,” says senior author Ronald DePinho, M.D., MD Anderson president.

In a series of experiments, the team found:

- Telomerase reactivation in malignant cells after genomic instability caused cancer progression.

- Inhibiting telomerase caused tumor cell death but also led to alternative lengthening of telomeres (ALT) independent of telomerase.
- ALT-positive cells increase both the expression and copy number of a gene called PGC-1 β , a key regulator of mitochondrial function, to compensate for mitochondrial defects and the high level of reactive oxygen species (ROS).
- Targeting PGC-1 β to weaken mitochondrial function enhances anti-telomerase therapy.

“These findings allow us to anticipate how tumor cells might respond to telomerase inhibition and highlight the need to develop drug combinations that target telomerase and these adaptive resistance mechanisms,” DePinho says.

REPORTED IN THE FEB. 17, 2012, EDITION OF CELL.

GENOMIC INSTABILITY ALLOWS CANCER TO ADVANCE

Telomere failure, telomerase activation drive prostate cancer progression

Genomic instability caused by an erosion of the protective caps on chromosomes, followed by activation of an enzyme that reinforces those caps, allows malignant cells to evade destruction and acquire more deadly characteristics, according to MD Anderson researchers.

The research focused on telomeres. Telomerase is inactive in normal cells. In cancer, the enzyme telomerase becomes activated and stabilizes telomeres, preserving damaged cells so they survive and reproduce.

In a strain of mice engineered to develop prostate cancer, all mice that went through this two-step process developed lethal cancer and 25% had the disease spread to the spine. Two groups of mice that avoided this cycle developed only precancerous lesions or localized prostate cancer.

A comparative analysis of genetic changes in the metastatic mouse tumors and those found in metastatic human prostate cancer identified that some genomic alterations, such as deletion of Smad4 gene, are drivers

in the spread of cancer to the bones and associated with human prostate cancer prognosis.

“These in vivo mouse studies, together with human and mouse prostate cancer genomic data, provide evidence that telomere dysfunction plays a critical role in prostate cancer initiation and progression,” says co-senior author Lynda Chin, M.D., professor and chair of MD Anderson’s Department of Genomic Medicine and scientific director of the Institute for Applied Cancer Science.

“Our studies also show that telomerase activation after genomic instability caused by telomere dysfunction enables evolving cancers to progress and acquire new biological properties, including central features of advanced human prostate cancer,” Chin says.

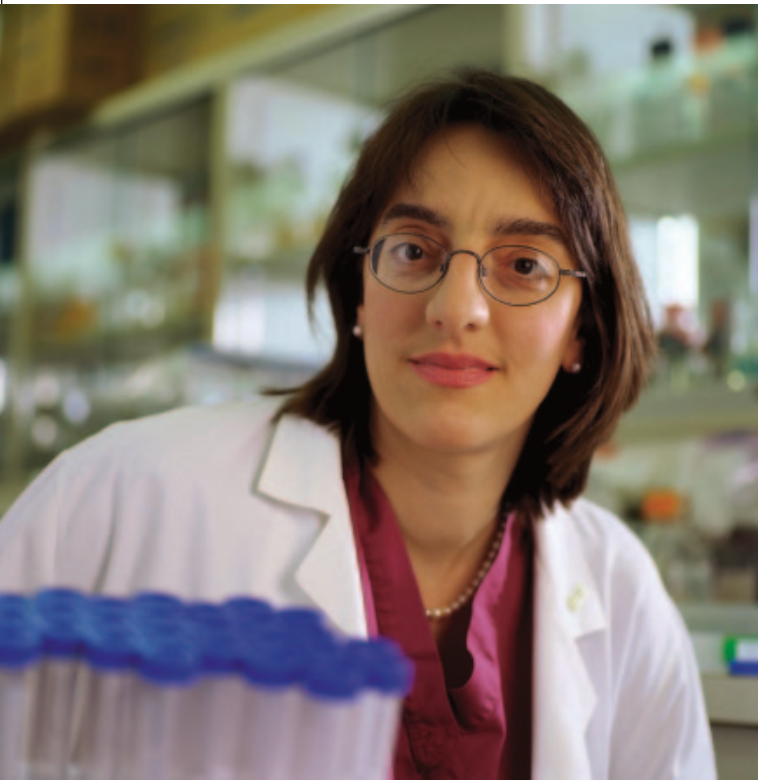
Chin and MD Anderson President Ronald DePinho, M.D., and colleagues conducted this research while at Dana-Farber Cancer Institute in Boston.

REPORTED IN THE MARCH 2, 2012, EDITION OF CELL.

GLOSSARY

Telomeres — repetitive nucleotide sequences at the tips of chromosomes that prevent genomic damage during cell division. With each division the telomeres shorten, leading eventually to genomic instability and cell death, a period termed “telomere crisis.” Telomeres have been compared with the plastic tips on shoelaces. They prevent chromosome ends from fraying and sticking to each other, which would scramble an organism’s genetic information and cause diseases such as cancer.

Telomerase — an enzyme that adds DNA sequence repeats (“TTAGGG” in all vertebrates) to the ends of telomere regions to preserve their length across cell divisions. Telomerase activity is low or absent in normal cells, which have enough segments of repeat nucleotides (telomeres) at the ends of their chromosomes that protect DNA stability during cell division. In cancer, telomerase becomes active during telomere crisis and saves the genomically abnormal cells, allowing them to reproduce.



Funda Meric-Bernstam, M.D.

ON THE PATH TO MORE ACCURATE PREDICTORS, TREATMENT

Research links protein regulation pathway to poor prognosis in breast cancer

Four proteins have been linked to poor prognosis for certain types of breast cancer and could lead to targeted therapies, according to MD Anderson researchers.

The proteins involved in translation, the final step of general protein production, are regulated by the PI3K/mTOR molecular signaling pathway, which has been linked to development and progression of several cancers.

More recently, mTOR activation has been tied to resistance to standard endocrine therapy in estrogen-receptor positive breast cancer, says Funda Meric-Bernstam, M.D., professor in MD Anderson's Department of Surgical Oncology, who presented the research.

The findings, if validated by additional studies, could lead to markers that help select patients who may have a high risk of relapse if treated with traditional endocrine therapy alone and identify those who might benefit from an additional targeted therapy, Meric-Bernstam says.

"As we understand how to select patients better we can more efficiently use these targeted therapies to improve outcomes for breast cancer patients," she says.

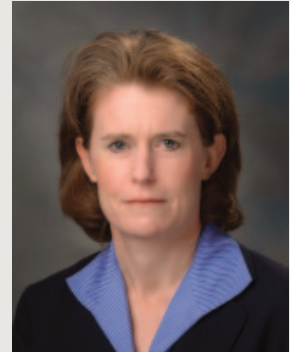
REPORTED APRIL 2012 AT THE ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH.

HYBRID VACCINE SHOWS PROMISE Demonstrates potential to prevent breast cancer recurrence

A breast cancer vaccine already shown to elicit a powerful immune response in women with varying levels of HER2 expression has the ability to improve recurrence rates and is well tolerated in an adjuvant setting.

The findings of the clinical trial led by MD Anderson researchers build on previous research showing the vaccine, known as AE37, safely and effectively raises immunity against human epidermal growth factor receptor 2 (HER2).

HER2 is an oncoprotein that promotes tumor growth and is expressed to some extent in 75% to 80% of breast cancer tumors.



Elizabeth Mittendorf, M.D.

The researchers found that patients who received the vaccination had an estimated recurrence rate of 10.3% compared to 18% in the control group at a median follow-up of 22 months. This represented a 43% reduction in the risk of recurrence.

"The vaccine educates the immune system to recognize HER2 as an invader," says Elizabeth Mittendorf, M.D., assistant professor in MD Anderson's Department of Surgical Oncology and the trial's national principal investigator. "By introducing it into women who have had breast cancer, our goal is to instruct the immune system to immediately recognize any recurring cancer cells and orchestrate an attack."

Most experimental drugs are first evaluated in patients with metastatic disease, when tumors have undergone drastic changes, including immunoescape — a mechanism that allows tumor cells to evade elimination by the immune system.

"There's very little chance a single peptide vaccine like AE37 will overcome a tumor at this stage of disease," Mittendorf says. "For this reason, it's more realistic to use the vaccine to prevent recurrence rather than to treat a large mass of already present cancer cells."

The vaccine appears to prevent recurrence and work in women with any level of HER2 expression.

The findings also draw parallels to other vaccines that have advanced to later phase trials, Mittendorf says. MD Anderson has three different types of HER2-based peptide vaccines in various stages of testing and development.

REPORTED JUNE 4, 2012, AT THE ANNUAL MEETING OF THE AMERICAN SOCIETY OF CLINICAL ONCOLOGY.

COMBINATION MAY UNLOCK TREATMENT RESISTANCE

Two drugs shown to shrink tumors in Ewing's sarcoma patients

By combining two drugs, researchers shrank tumors in some patients with treatment-resistant Ewing's sarcoma, a cancer that primarily affects the bones and most often occurs in teens and young adults.

The two drugs address molecular pathways that cause cell growth and survival, abnormal blood vessel growth, and resistance to chemotherapy and radiation.



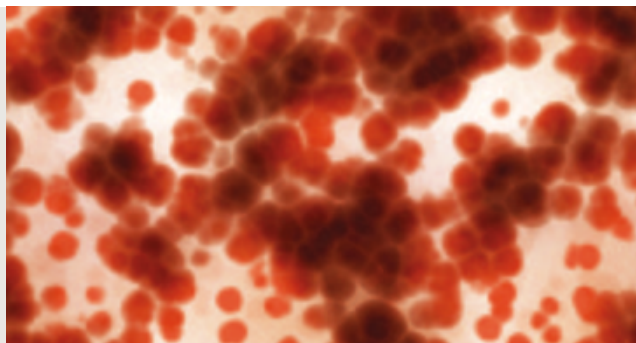
Aung Naing, M.D.

Lead researcher Aung Naing, M.D., assistant professor in MD Anderson's Department of Investigational Cancer Therapeutics, says that prior to the Phase I clinical trial, patients were heavily treated and resisted most other treatments. "We're encouraged that five of 17 patients with Ewing's sarcoma — about 29% — responded to the treatment," Naing says. Tumors in those five patients reduced by more than 20%.

When the two drugs, cixutumumab and temsirolimus, were used as single agents, treatment results were mixed. Researchers theorized that combining the drugs would help stave off onset of drug resistance, a common occurrence and major obstacle in cancer treatment.

"By combining drugs in a scientifically rational way, we may be able to overcome resistance to single agents and provide benefit to patients with advanced Ewing's sarcoma," says study senior author Razelle Kurzrock, M.D., professor and chair of the Department of Investigational Cancer Therapeutics.

REPORTED IN THE MARCH 31, 2012, EDITION OF CLINICAL CANCER RESEARCH AND AT THE APRIL 2012 ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR CANCER RESEARCH.



HISTORICAL MARKER

Researchers discover connection between platelet count and cancer

As early as 1867, doctors noticed that cancer patients are at high risk for developing blood clots. Recently, MD Anderson professor Anil Sood, M.D., and colleagues discovered an explanation and a vicious cycle: The body reacts to tumors by producing high amounts of platelets, which then feed tumor growth.

Sood found in a Phase I/II clinical trial that treatment of ovarian cancer patients with siltuximab, an antibody to the inflammatory cytokine interleukin-6, sharply reduced platelet counts during a three-week period.

"Our collaborative study not only identified a mechanism that explains platelet count elevation, but also connects this state, called thrombocytosis, to the severity of ovarian cancer," says Sood, professor in the Department of Gynecologic Oncology and Reproductive Medicine and the Department of Cancer Biology.

More research is needed to understand the connection and perhaps take advantage of it to treat people. Platelet levels also may serve as biomarkers for detecting ovarian and other cancers.

REPORTED IN THE FEB. 16, 2012, EDITION OF THE NEW ENGLAND JOURNAL OF MEDICINE.

DRUG SHRINKS MELANOMA BRAIN METASTASES

An experimental drug targeting a common mutation in melanoma successfully shrank tumors that spread to the brain in nine out of 10 patients who participated in an international Phase I clinical trial.

The drug dabrafenib, which targets the Val600 BRAF mutation that is active in half of melanoma cases, also cut the size of tumors in 25 of 36 patients with late-stage melanoma that had not spread to the brain. In addition, the drug showed activity in other cancer types with the BRAF mutation.

"Nine out of 10 responses among patients with brain metastases is really exciting. No other systemic therapy has ever demonstrated this much activity against melanoma brain metastases," says study co-lead author Gerald Falchook, M.D., assistant professor in MD Anderson's Department of Investigational Cancer Therapeutics.

Melanoma patients whose disease has spread to their brains have a median overall survival of four or five months, the researchers note. Drugs used to treat brain metastases have response rates of 10% or lower. Surgery and stereotactic or whole-brain radiation also are used.

Tumor shrinkage in the nine responders ranged from 20% to 100%. In four cases, the brain metastases disappeared.

These results will need to be validated in additional clinical trials with larger groups of patients, Falchook says. "This changes how we think of this drug and exclusion criteria for future trials."

"Most clinical trials exclude patients with brain metastases because the drugs are assumed not to cross the blood-brain barrier," he says. "These are the patients most in need of a clinical trial because their treatment options are so limited."

REPORTED IN THE MAY 18, 2012, ISSUE OF THE LANCET.



Gerald Falchook, M.D.



The Process Improvement group led by Doris Quinn, Ph.D. (left), includes associate Beverly Hayes (center) and nurse Gina Aranzamendez, a clinical quality improvement consultant. To refine processes in the institution, they often must first map them step by step. The flow chart here uncovered opportunities to improve care for head and neck cancer patients and helped business analysts better handle costs.

WHERE CHANGE BEGINS

Patients benefit from quality improvement By Jenny Montgomery

When Doris Quinn, Ph.D., worked as a hospital nurse early in her career, she came up with an effective way to make sure her patients had enough linens despite chronic shortages. She hoarded them.

Four decades and a doctoral degree later, she would rather figure out why there were not enough linens to go around.

“The goal has to be solutions that benefit everyone. Real change, not workarounds,” says Quinn, now director of MD Anderson’s Department of Process Improvement and Quality Education. “Instead of a culture where we say, ‘They should fix that,’ we should wonder, ‘How can I fix that?’”

Quinn’s group is there to help. Her team includes nurses, educators and others skilled at mapping out work processes step by step and homing in on the trouble spots. Just as important, they can teach front-line employees and their managers how to identify inefficiencies and work out solutions themselves.

Whether the goal is to reduce patient wait times or prevent billing mistakes, Quinn believes that those with the most questions and answers are the employees who run up against the problems every day. If you want real improvement, Quinn suggests you should want your employees asking, “What is my process, and why is it making me crazy?”

Revelations of a flow chart

It takes eight pages to show the steps involved in transferring a Head and Neck Center patient out of the Surgical Intensive Care Unit. To create the color-coded flow chart laying out the patient’s transfer, Quinn’s clinical consultants have interviewed almost a dozen employees.

They include physicians (orange), nurses (pink), equipment techs (purple), pharmacy employees (blue) and medical clerks (teal). A consulting team led by nurse Laurie Kaufman, a manager of clinical quality improvement in the department, is putting together dozens of such charts for the Head and Neck patient population, using outpatient, inpatient, diagnostic, treatment and ancillary services.

These charts include the estimated times needed to perform each task. This information will allow business analysts from the Office of Finance to calculate how much a task costs when they tally up both personnel and other expenses, such as equipment and research.

This data will help MD Anderson’s Institute for Cancer Care Excellence as it develops a new model for calculating the cost of providing patient care. When negotiating payments from insurers and payers such as Medicare, the institution needs to know how much is necessary to cover expenses and offer patients a better value in an era of health care reform.

The cost-modeling project is a big one with a long-term payoff, but the process maps created for it also have more immediate uses in everyday operations, just as process maps developed for the consultants’ other projects do, from hand hygiene to faculty appointments.





“I love it when I see the light bulb go on.”

— Laurie Kaufman

In addition to bringing to light waste in the work process and obstacles to smooth patient flow, the charts can give managers a better handle on the realities employees face. They can also lay the groundwork for employee training manuals and for “what to expect” patient roadmaps.

An ‘aha’ moment

Perhaps most important, process maps can generate an interest in improvement. A doctor who writes orders dozens of times a day discovers the multiplied consequences of skipping what seemed to be a trivial step. A nurse who sees the extra time required for a workaround is motivated to seek a better solution.

“I love it when I see the light bulb go on,” Kaufman says. “There’s an ‘aha’ moment of understanding, and it’s energizing. When they can suddenly see improvement opportunities, a sense of urgency kicks in.”

Lessons from Quality College

The vice president who oversees MD Anderson’s pharmacies, Joel Lajeunesse, has an impressive view of the Texas Medical Center from his 18th floor office, but he is more interested in what his employees see every day.

After all, it was front-line pharmacy employees who fielded the phone calls from distressed patients who used to pick up pre-filled medication syringes, only to arrive home without needles. These employees identified a solution, and outpatient

pharmacies began placing neon stickers on the medications, reminding patients that needles were not included. The stickers also served as visual cues for pharmacists to tell patients where to pick them up.

Lajeunesse says grass-roots efforts such as this make a strong case for empowering employees to question why something has always been done a certain way and whether there might be a better one. He would like them to grasp the value of process maps and to seek measurable improvements, as industrial engineers do when scrutinizing an auto plant assembly line.

To that end, last year he required his 500 employees — pharmacists, technicians, researchers, administrative assistants, IT experts and finance whizzes — to take a short video class called Plan-Do-Study-Act 101 from the Quality College, an online resource provided by Quinn’s educators.

There will be follow-up training on teamwork from the college again this year. His managers must also take a series of classes that qualify them for a “novice certificate” in the concepts of quality improvement used successfully in many industries.

“I’d like to see these concepts embedded throughout our division, and I’m trying to give employees the basic skill set they need to implement change,” says Lajeunesse, who is on the Quality College steering committee.



The education team that’s spreading the principles of quality improvement to employees includes (from left) Barbara Shelton, Duke Rohe, Ruby McCollough, Cylette Willis, Ph.D., and Bob Joyce. Willis, associate director of Quality Improvement Education and Evaluation, says Quality College has much to offer those looking for ways to cut waste from work processes.

A well-stocked tool chest

The Quality College encourages employees who see problems to become do-it-yourselfers. This year one of the school's most popular classes covers widely used Lean methods that eliminate waste from work processes. Other offerings range from a nine-minute video on constructing flow charts to an advanced Six Sigma course on using statistical analysis to improve an organization's performance.

The "dean" of the Quality College, Cylette Willis, Ph.D., says there is a misconception that making improvements is hard.

"You can do small projects, and you can do big projects," says Willis, associate director of Quality Improvement Education and Evaluation. "You just have to pick a problem and dive in. We've designed our websites to be the 'just-in-time' source for quality education and tools that teams need for successful projects. Employees learn through Quality College and are empowered to transfer their new skills to make things better for their patients and teams. It's a win-win process."

Improvement you can measure

Charisse Acosta is a cytotechnologist by training, Joan Woods is a medical laboratory technician. Both now work full-time on quality improvement for the Division of Pathology and Laboratory Medicine. Their latest success grew out of another popular program coordinated by Quinn's educators that targets doctors, nurses and other clinicians.

The Clinical Safety and Effectiveness course meets eight times during six months to teach quality improvement concepts to teams taking on problems in their work areas. In addition to providing instruction from in-house quality experts and bringing in nationally respected guest speakers, the course offers an experienced facilitator for each project.

There is competition for the 85 or so spots that are open twice a year, so participants are ambitious when proposing projects for the program, which is funded by The University of Texas System.

For their award-winning project last year, Acosta and Woods set out to cut in half the number of patients who arrive at the outpatient diagnostic centers' labs without orders. They did considerably better.

Top: Nurse Laurie Kaufman (left), a clinical quality improvement manager, and Courtney Barnes, a performance improvement associate, begin building a flow chart by laying out notes they have taken on each step in a process.

Right: Lisa McLemore, senior administrative assistant (back), helps Cathy LaComb, program coordinator for Clinical Safety and Effectiveness, prepare for a class.



The Division of Pathology and Laboratory Medicine has a team working on quality improvement that includes technician Joan Woods, project director Ron Phipps and technologist Charisse Acosta. One project they worked on won an award at The University of Texas System's Clinical Safety and Effectiveness Conference last year for decreasing the number of patients showing up for blood work at labs without orders.



Numbers speak loudly

Working with clinic employees from various departments that routinely send patients their way for lab work, the six-member team led by Acosta and Woods discovered that each day an average of 11 patients arrived without lab orders to have blood drawn. Correcting each omission took an average of 23 minutes.

In some of the departments, employees needed to be retrained or forms reworded. In one case, the problem turned out to be that the clinic was just one floor away from the lab, so patients arrived a few minutes ahead of their orders. A front-line employee in the clinic saw a quick fix: setting up a checkout desk at the clinic exit where orders could be entered before the patient left for the lab.

By reducing the number of patients without lab orders by 73%, Acosta and Woods' team calculated its project will save more than \$16,000 worth of employees' time each year and — more importantly — save patients more than 800 hours of wait time.

Cathy LaComb, program coordinator for Clinical Safety and Effectiveness, believes that if employees are motivated, her program has the tools to help them.

“We can take you from what you think the problem is to pinning it down to developing an action plan to measure your success,” LaComb says. “Then we show you how to sustain that success. Improvement never stops.”

Success stories by the dozen

Whether acting as quality improvement consultants or educators, everyone who works in the Department of Process Improvement and Quality Education is a cheerleader for looking hard at processes and improving them. More than 70 projects went on display last fall at the group's annual Celebrating Improvement event, all projects of employees who have abandoned the “learned helplessness” that Quinn believes can cripple large institutions.

Once an assistant to quality-improvement pioneer W. Edwards Deming, Ph.D., Quinn believes the time spent trying to understand a process is time well spent.

“When you're process-illiterate, you don't see the problems. You don't realize the same things happen over and over,” she says. “When you break it down to see exactly who's doing what, so much foolishness comes to light. And that's where change begins.”



Robert Del Guidice, clinical administrative director in Pathology and Laboratory Medicine, and Starnisha Anderson-Moore, lead services coordinator, worked with Charisse Acosta, Joan Woods and Ron Phipps (in photo above) to address the bottleneck caused when patients arrived for blood work without orders.

Sometimes it takes an engineer

If quality engineers can speed up a car assembly line, why not the time it takes to fill a patient's prescription? If they can reduce shipping errors, why not a doctor's billing errors?

Most on MD Anderson's Quality Measurement and Engineering team bring expertise they learned on factory floors. Their department director, Victoria Jordan, Ph.D., has worked as a quality consultant for a wide range of industries, from beer to steel.

Although well aware they no longer grease the wheels of industry, these engineers see familiar opportunities for improving health care. A lab can reconfigure the floor plan of its waiting room to eliminate bottlenecks. Appointment schedulers can tweak their templates so patients don't have to wait so long for a CT scan. A clinic can adjust its staff schedules to accommodate peak times.

Sometimes employees find their own fixes through the educational and consulting services offered by the Department of Process Improvement and Quality Education. But when a complex problem calls for the more sophisticated tools wielded by engineers — think math models and statistical analysis — Jordan's department is ready to help.

The two departments share office space and often work together, along with Patient Safety and Accreditation, led by Julie Foster. They are overseen by John Bingham, vice president and chief quality officer.

Within Process Improvement, there are no "silos." They all work together to help the organization achieve institutional goals and improve the patient experience.

For example, the quality engineering team, under Larry Vines, associate director, teaches classes within the Quality College and often facilitates Clinical Safety and Effectiveness teams. And even as a process improvement team maps out processes in the Head and Neck Center so costs can be calculated, the quality engineering team is helping the center tackle a project to enhance the patient experience.

The center intends to address the time it takes for a new patient to get an appointment, the time from the first appointment to final day of treatment, the frequency of diagnostic testing and clinical visits, and nurse staffing.

Jordan hopes what's learned from the project can be applied elsewhere. With only about a dozen engineers on the payroll, she closely scrutinizes requests for their help, based on the priorities of MD Anderson's leaders and the likelihood of institution-wide implications.

"Transformation won't come from a project here, a project there," Jordan says. "Quality improvement should be going on that we don't even know about. Everyone must realize he or she has a role to play."



As director of Quality Measurement and Engineering, Victoria Jordan, Ph.D., oversees the quality engineers who are called in to consult on some of the institution's more complex problems.

Across the MD Anderson campus, fan arrays are beginning to replace large, inefficient fans as a way to move air through a building. For the same amount of energy expended, these arrays help produce temperatures 5 degrees to 6 degrees cooler.

Green medicine

Balancing a global cause with global concerns

By David Raffetto

The task of curing cancer comes with some inconvenient truths — environmentally speaking.

With more than 19,000 employees and volunteers serving patients and conducting research in nearly 40 buildings, MD Anderson requires energy and materials beyond the scope of a typical health care facility.

Upholding standards of care while minimizing environmental impact is something that MD Anderson has embraced. Being an international leader in cancer care comes with tremendous responsibility to patients, to science and to the planet.

By the numbers

In a typical year, MD Anderson's green initiatives divert up to 3 million pounds of waste from landfills. That number includes everything from paper and plastic to scrap silver and mercury materials. Having back-end programs for recycling and reuse is only half the story, though.

"People always focus on the recycling numbers," notes Matt Berkheiser, Dr.P.H., executive director for Environmental Health and Safety. "And those efforts are important. But equally

important is eliminating potential waste on the front end by using less, and by working smarter and more efficiently."

For example, recycling 25% of paper used is good. But moving to an electronic process and not using that paper in the first place is much better.

"To truly be a green institution, it takes more than buy-in on the consumer end after a resource is already used," Berkheiser says. "It takes a concerted effort to design processes and operations in ways that account for environmental impact from the beginning."

Beyond the blue bins

Every workplace has them. Maybe they are green instead of blue, but the bin with the three arrows — the one beside the trash can — is often seen as the sole symbol for sustainable efforts.

Not so at MD Anderson, where those blue bins are just one of many repositories and programs designed to cultivate a green-thinking culture.

"Paper and plastic recycling isn't enough," says Mike Pokluda, program manager in Environmental Protection. "We look at everything: batteries, printer cartridges, discarded electronics, X-ray film, blue wrap from the surgery suites — even the

wood pallets that sit on our loading docks and in our warehouses. If part of a material can be reused, recycled or disposed of in a more environmentally conscious way, we're committed to doing just that."

Green efforts go beyond materials management. Commuting programs like vanpools and mass transit reimbursement ensure that MD Anderson employees use less fossil fuel on the way to work. The use of bio-renewable cleaners makes for a greener choice than petroleum-based products. And incorporating drought-resistant plants into the campus landscape helps with water conservation.

On the research side of the house, chemical storage and chemical inventory systems help safeguard those substances that are crucial for cancer breakthroughs but toxic when released into the natural environment.

Blue bins, sure — but so much more.

Eco-infrastructure

A recent addition to the Texas Medical Center skyline is MD Anderson's Mid Campus Building, or 1MC. One might expect the 25-story, 1.4 million-square-foot behemoth to be a resource drain.

Well, best not judge a building by its size. From the initial design phase, 1MC was drawn up to be different.

With an open-office floor plan surrounded by glass panels, most of the building benefits from plentiful natural light. Automated lighting systems sense existing light and adjust their own artificial levels. Permanent sunshades on the west side of the building keep things cool in the summer months. The building is a fine example of simplicity and sophistication working together to save electricity.

1MC helps itself in other ways, too. The building's cooling and ventilation systems collect condensation that gets re-routed for landscape irrigation.

"That's more than a million gallons of water each year that we're reclaiming and not buying from the City of Houston," says Lawrence Kubacak, project director in Capital Planning and Management.

That's smart architecture redefining the term "green space" altogether.

Nurturing nature

These and other strategies are proving MD Anderson to be a leader among its peers — not only as a cancer care and cancer research facility, but also as a place where sustainability is taken seriously.

In many endeavors, health care institutions strive to be a step ahead. As far as environmental footprints are concerned, though, MD Anderson treads lightly.

"PAPER
AND PLASTIC
RECYCLING
ISN'T
ENOUGH."

At Mid Campus Building 1, water reclaimed from air-conditioning and ventilation systems irrigates the flowers and trees outside, saving almost 1 million gallons a year.



Going the distance

Regional expansion extends MD Anderson’s mission to Houston suburbs

By Jacqueline Preston

It’s 7 a.m. Tuesday, and Loren Rourke, M.D., is on a journey to help breast cancer patients beat the odds.

A breast surgical oncologist, Rourke and her highly skilled team host a multidisciplinary breast cancer conference at MD Anderson’s Regional Care Center in The Woodlands, a suburb north of Houston.

The Tuesday morning huddle brings together experts in medical oncology, radiation oncology, surgical oncology, plastic surgery, diagnostic imaging, pathology and nursing to review approximately 25 patient cases each week.

The team is involved in every aspect of patients’ care from diagnosis to survivorship. And that’s welcome news for patients and their families.

“Our patients are always so relieved when I tell them their case will be reviewed by our whole health care team,” says Rourke, assistant professor in the Department of Surgical Oncology. “It reassures them to know that we all work together for their benefit.”

Meanwhile, 52 miles south of The Woodlands, John Papadopoulos, M.D., sees his first prostate cancer patient of the day at the regional center in Sugar Land. Nestled in this fast-growing southwest Houston suburb is the center’s new prostate cancer clinic.

“Our patients appreciate that they have easy access to their cancer care team and that we are part of their local medical community,” says Papadopoulos, assistant professor in the Department of Urology and the regional centers’ first urologic oncologist. To meet the demand for MD Anderson’s standard of prostate cancer care in west Houston, a second prostate cancer clinic has been established at the regional center in Katy.

All the physicians at MD Anderson’s four regional locations around Houston — in the Bay Area, Sugar Land, Katy and The Woodlands — work closely with community referring physicians.

Loren Rourke, M.D. (left), surgical oncologist, and Katie Borths, physician assistant, participate in a review of treatment plans for breast cancer patients at MD Anderson Regional Care Center in The Woodlands. The weekly conference includes other MD Anderson physicians, as well as collaborators from St. Luke’s The Woodlands Hospital.



New and familiar territory

MD Anderson's decision to bring mission-based, high-quality comprehensive cancer care services to the metropolitan Houston area is based on regional population growth and the need to position services conveniently for all patients in the region.

The regional concept was launched in 1999 when the Department of Radiation Oncology brought radiation therapy services to suburban areas outside the Texas Medical Center.

"What started as a single location, 'satellite' radiation oncology service has become a clinically integrated, regional system that is bringing TMC campus, disease-specific programs to locations that cover a 10,000-square-mile area," says surgeon Peter Pisters, M.D., vice president and medical director for the regional care centers. "We're regionalizing MD Anderson's programs and services to bring our world-class brand of comprehensive and patient-centered cancer care to residents across southeast Texas."

Collaboration across MD Anderson divisions and departments remains the driving force behind the regional program. While the institution's care centers all offer medical, radiation and surgical oncology services, some locations also provide specialty services to meet growing demands: accelerated partial breast irradiation, intensity-modulated radiation therapy, head and neck surgery and breast cancer care, including breast surgery.

Most recently, dermatology, genitourinary medical oncology and urology services have been added at some of the centers. Gynecologic oncology care is next.

Through that teamwork, new and expanded allied services have emerged at various locations. Among them are pain management, infusion therapy and electronic prescription orders.

The regional centers also work closely with the Division of Pathology and Laboratory Medicine to provide on-site outpatient lab services. Last year, nearly half the patients who accessed regional care services were those receiving care at the TMC campus.

"Having lab work performed near where patients live makes it much more convenient for them," Pisters says. "Our regional system allows adult and pediatric patients to receive a cancer treatment plan from our TMC campus teams that includes prolonged treatments, like chemotherapy and radiation, which can now be delivered conveniently close to home."



Nikesh Jasani, M.D., medical director (center), visits with Criselda Polsgrove, nurse manager (left), and Beth Smith, business services manager, at MD Anderson Regional Care Center in Katy. Together, they make up the center's on-site management team.



During a patient treatment planning session at MD Anderson Regional Care Center in The Woodlands, radiation oncologists Pamela Schlembach, M.D. (left), and Michelle Ludwig, M.D., are joined by Benjamin Smith, M.D., from the institution's Texas Medical Center campus.

“We’re
bringing
cutting-edge
clinical trials
to more
patients.”

— Peter Pisters, M.D.



Hans Sookraj, radiation therapist at MD Anderson Regional Care Center in the Bay Area, explains the use of a treatment immobilization device to patient Francis Zeringue Jr. of Dickinson, Texas.

Holistic care in motion

Each year, the institution also provides more than 600 hours of support services for MD Anderson patients and their caregivers. Consider Traci Newsom, a social work counselor. Each week, she drives to the regional care centers to lend her expertise and ear to patients. She also helps secure hotel and transportation medical discounts and social services for patients and their families.

“A big part of my job is finding a whole new batch of community resources,” Newsom says. “You have to get out there, meet people and form working relationships first.”

When she’s not on the road, Newsom teaches stress management classes. They’re part of the “Road to Wellness,” a five-step recovery program that helps transition patients to life after treatment. The program was created in 2007 by Matthew Ballo, M.D., professor in the Department of Radiation Oncology at the Bay Area center.

Social work is part of a growing list of patient support services provided at the centers. Other services include nutritional counseling, physical therapy and lymphedema therapy.

A caravan of support

For many cancer patients and their families, support groups are a critical part of the healing process. Patients often need practical support to help them cope with their new diagnosis or treatment.

MD Anderson provides a wide range of these services in one-on-one and group settings at various regional locations. Classes on how to manage cancer-related fatigue and how to maintain a healthy diet before and after cancer treatment are led by senior health education specialists.

Like all support groups sanctioned by the institution, the classes are open to all MD Anderson patients.

At the Bay Area and Sugar Land centers, patients can take part in Look Good... Feel Better. This program helps them improve their appearance and self-image by arming them with techniques and tools to manage the physical side effects of chemotherapy and radiation treatments.

Once a month at The Woodlands center, Pamela Schlembach, M.D., associate professor in the Department of Radiation Oncology, with the help of Nicole Luckett, breast cancer nurse navigator, facilitates a “Breast Friends” support



John Papadopoulos, M.D., a urologic oncologist, consults with and provides care for prostate cancer patients at MD Anderson's regional centers in Sugar Land and Katy.

group. The meeting connects new and former breast cancer patients in the community. A variety of topics are discussed, such as hormone therapy, nutrition, weight loss, advances in oncology, managing symptoms and sexuality.

Within this group, there are small groups for male caregivers, as well as for patients with younger children. To replicate that success, two new "Breast Friends" support groups were formed recently at the Sugar Land and Katy centers.

Access to clinical trials across the region

Research-driven patient care is a hallmark of MD Anderson. Last year, nearly 10,000 patients participated in clinical trials.

An expanded clinical research program means regional patients have access to promising new treatments via hundreds of clinical trials conducted by clinical researchers across the institution. In February, the 100th regional patient enrolled in a clinical trial.

Pisters says the community setting has great clinical research potential and is a haven of hope for many more patients who would otherwise miss out on potentially life-saving treatment.

"MD Anderson's research mission spans a wide geographic area that will reach 7 million residents by 2020," he says. "Through this expansion, we're bringing cutting-edge clinical trials to more patients closer to where they live and work."

For more information about MD Anderson's regional care system, visit www.mdanderson.org/regionalcare.

Fast facts on MD Anderson's regional care centers

- Four suburban locations are in Katy, Sugar Land, The Woodlands and the Bay Area.
- Patients receiving care increased by 200% from 2009 to 2011.
- In Fiscal Year 2011, MD Anderson regional care centers saw 6,423 patients.
- The growing regional workforce includes nearly 250 full-time employees, including 25 physicians, 55 nurses and mid-level providers and 40 access team members.
- During FY11, 26 regional care center volunteers contributed 2,904 hours.

When life is good

By Scott Merville

Symptom burden lifted for rare blood cancer

For Mike Harris, life is good.

“I’m alive today because of a clinical trial,” he says of a Phase I study he entered at MD Anderson four years ago for his myelofibrosis, a rare blood cancer that had no standard treatment at the time.

Last year, he and wife Sandy celebrated their 45th wedding anniversary. They live in Kingwood, north of Houston, near their son’s family, and enjoy strong connections to their two grandchildren.

The 68-year-old retiree is not exactly retired. He puts the communications skills honed during a career in agricultural public relations in the Midwest to good use as a volunteer for two chambers of commerce.

Harris is also self-employed as an insurance agent specializing in long-term care insurance, annuities and life insurance.

First sign of hope

The drug Harris received on that earliest-stage study — and has taken ever since — went on to become in November 2011 the first drug ever approved by the U.S. Food and Drug Administration to treat myelofibrosis.

Srdan Verstovsek, M.D., Ph.D., associate professor in MD Anderson’s Department of Leukemia, led that Phase I study and was principal investigator on every U.S. clinical trial for ruxolitinib, developed by Incyte Corporation. It is known commercially as Jakafi™.

Myelofibrosis strikes about 3,000 Americans annually. A build-up of malignant cells in the bone marrow triggers inflammation that scars the bone marrow, eventually causing severe anemia, swelling of the spleen and liver, extreme weight loss and, ultimately, death. The debilitating symptoms contribute to a poor quality of life.

“We previously had no therapies to attack the molecular abnormalities that cause myelofibrosis. The emergence of ruxolitinib has been

a major improvement for our patients. They feel better and live longer,” Verstovsek says.

“The clinical trials showed ruxolitinib provided very good control of the symptoms of myelofibrosis, including spleen shrinkage, liver reduction, and improvements in the patients’ ability to walk, eat and gain weight. A Phase III trial showed a survival benefit, too.”

With no approved therapies, oncologists tried chemotherapies approved for other malignancies combined with supportive care, mainly blood transfusions. About 10% of patients are eligible for bone marrow transplants.

When these off-label drugs work at all, the effect usually lasts only 6 to 12 months, Verstovsek says.

Heavy symptom burden

In Harris’ case, a variety of drugs kept the disease at bay for two years before his oncologist referred him to Verstovsek. “My doctor had heard Dr. Verstovsek speak about this new drug at a meeting.”

Myelofibrosis comes with a formidable set of symptoms, including abdominal pain, exhaustion, steep weight loss, night sweats, a powerful and persistent itching sensation, bone pain and expansion of the spleen to the extent that it suppresses appetite, affects breathing and makes it difficult to bend or walk.

End-stage patients resemble those dying of starvation, with huge abdomens and emaciated limbs.

Harris had the swollen spleen and vividly recalls being too tired to leave the house. “I couldn’t walk up a single flight of stairs without resting.”

Some patients, Verstovsek notes, have lost 30 to 50 pounds as their disease progressed. Many regain it all and more when taking the drug. “The main long-term side effect of this drug appears to be weight gain,” he says.

He estimates 80% of myelofibrosis patients receive some clinical benefit from ruxolitinib.

Not a cure, but considerable relief

Even with major symptom relief and extended survival, ruxolitinib does not cure the disease or reverse damage to bone marrow. “It doesn’t get any worse or any better,” Verstovsek says. Eventually, the drug stops working, but responses tend to be durable and many patients have been on ruxolitinib for four or five years.

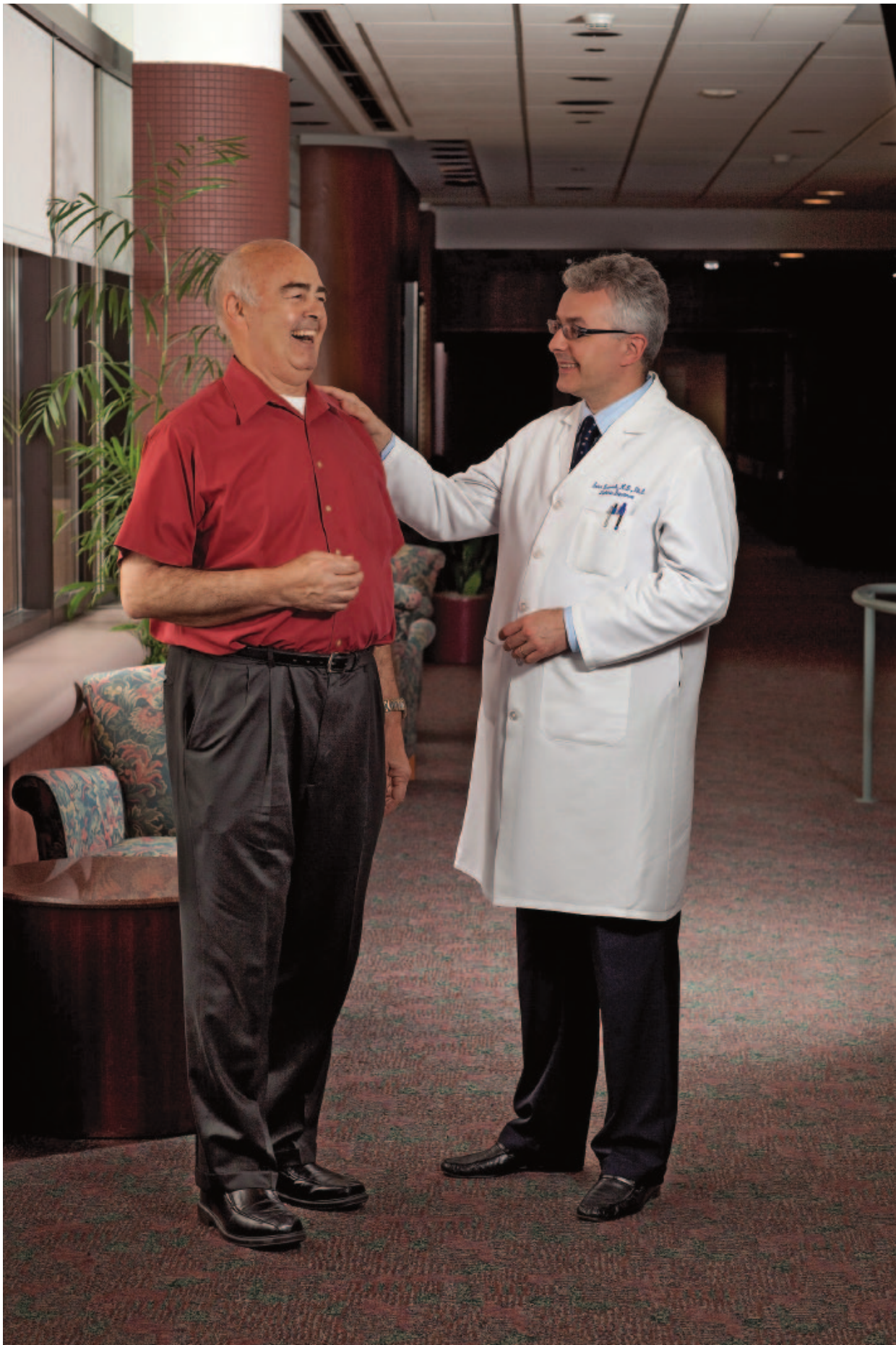
Verstovsek’s practice focuses on myeloproliferative neoplasms, which also include polycythemia vera, overproduction of red blood cells, and essential thrombocythemia, overproduction of platelets. He sees 200-250 new patients annually and also heads MD Anderson’s Clinical Research Center for Myeloproliferative Neoplasms, a new center formed last year in the Department of Leukemia and funded by philanthropy.

It’s a far cry from the situation when Verstovsek joined the faculty in 2001. Then, about 60 patients with any myeloproliferative neoplasm came to MD Anderson annually.

When the JAK2 mutation was discovered in 2005, opening the door to a possible treatment, Verstovsek sprang into action. He identified potential patients through advocacy groups, online chat rooms and other channels and reached out to drug companies to bring them together for clinical trials to finally address the disease.

MD Anderson typically has 10 or more open clinical trials for drugs from a variety of companies to treat myeloproliferative neoplasms.

This is comforting for Mike Harris. “Dr. Verstovsek tells me if this stops working, he’s got four more drugs in the pipeline.”



Mike Harris is alive today, thanks to a clinical trial he entered four years ago for his myelofibrosis. While the treatment he received isn't a cure, Srdan Verstovsek, M.D., Ph.D., principal investigator on the Phase I trial, discovered that ruxolitinib provided good control of the disease's symptoms, which has improved patient outcomes and quality of life.



Picture This

Beauty/Barber Shop re-energizes patients

By Tamara Hill

A shampoo, a haircut, even a shave can help patients feel better during a difficult time. MD Anderson recognizes the psychological benefits of looking and feeling good and offers salon services without charge in its Beauty/Barber Shop.

The shop, which features a spa-like atmosphere, is located on Floor 6 of the Main Building. It's one of many programs offered by the Department of Volunteer Services.

“There’s no greater feeling than to see the emotional transformation that patients experience here,” says Lindora Munoz, staff licensed cosmetologist and shop manager. “Patients may come in sad, but when they leave, they usually have a big smile and say they feel better.”

Patients are seen on a first-come, first-served basis 8 a.m.-5 p.m. weekdays. Two certified staff offer a number of services, including shampoos, scalp treatments, haircuts, shaves, head coverings and wigs, and limited bedside assistance.



Our photographer stopped by the Beauty/Barber Shop on a recent busy afternoon:

1. Lindora Munoz, staff cosmetologist, styles patient Karen Leah Doyle’s hair. Doyle, a colon cancer survivor, says the Beauty/Barber Shop experience is so positive that “you forget where you are. You forget that you’re in a hospital.”

2. Staff cosmetologist Justine Joseph works with MD Anderson employee and patient Lucinda Jefferson. In addition to offering shampooing, conditioning and styling, the Beauty/Barber Shop provides full-head shaves for patients.

3. Near large windows that look out on Reliant Stadium and the Texas Medical Center are a selection of complimentary scarves, turbans and wigs. Two certified staff, with the support of volunteers,

offer a number of services, including shampoos, scalp treatments, haircuts, shaves, head coverings and wigs, and limited bedside assistance.

4. The shop includes a professional salon design with five styling stations, two shampoo stations and two hair dryers. There also is an area that provides privacy for patients.

5. Staff cosmetologists used this hand-held dryer, curling irons and other tools of the trade to assist 6,071 patients with more than 12,000 specialized hair and head care services in Fiscal Year 2011.

6. Complimentary wigs in a variety of colors and styles are available for patients.

7. Volunteer Mary Stone demonstrates scarf tying at a Look Good ... Feel Better event, a collaboration of the American Cancer Society, Personal Care Products Council Foundation and Professional Beauty Association/National Cosmetology Association.

The staff cosmetologists also participate in these monthly sessions, in which patients learn how to wear head scarves in fashionable new ways. Services like these help them adjust to temporary or permanent changes in their appearance related to their cancer treatment.

PRACTICE MAKES PERFECT

By Lori Baker

HIGH-TECH SIMULATION PREPARES MEDICAL PROVIDERS



Dexterity is key in minimally invasive surgery using the da Vinci Robotic Surgical System. Under the guidance of Pamela Soliman, M.D. (left), assistant professor in the Department of Gynecologic Oncology and Reproductive Medicine, Becky Stone, M.D., a fellow, gains hands-on, simulated experience through a series of training modules. Her results are projected and graded on the computer screen.

Hurt a store mannequin and it continues to grin, but tears can course down the rubber cheeks of its high-tech cousins used in medical simulation.

This and other human reactions transform these mannequins into valuable teachers for health care providers, allowing them to hone skills that help — even save — patients.

“If someone I loved had a heart attack, I would want the person helping to have the best chance of saving him or her, and I believe simulation training is key to saving lives,” says Staci Eguia, clinical nurse in MD Anderson’s Critical Care Unit.

Eguia should know. She has taken an advanced life support training course every two

years since 1989. She also has received training in different places, giving her a broader experience base than most, since she started her career as a respiratory therapist in California. She gives high marks to the instructors and mannequins in MD Anderson’s simulation center.

“You don’t pass the course offered here unless you know what to do and can demonstrate you can do it,” Eguia says. “They set really high standards for their instructors. The curriculum is thorough, and the simulation experiences are geared to how adults learn best.”

Until recently, doctors, nurses and other health care providers learned the art of medicine in the classroom and through the apprenticeship model. Working with more seasoned professionals, they watched and slowly built their skills through carefully observed interactions with patients. Adding medical simulation to the learning equation has many benefits.

“There’s increasing evidence that the more practice a clinician has, the better he or she performs, and simulation is a safe and effective way to gain practice,” says Gregory Botz, M.D., professor in the Department of Critical Care and the physician leading MD Anderson’s simulation efforts through the Office of Performance Improvement.

You could learn a lot from a dummy

Anyone who has taken a basic cardiopulmonary resuscitation (CPR) course at MD Anderson has probably practiced on Annie, a mannequin introduced in 1960. While Annie still has a place in the simulation center, she's one of many that range in size and complexity.

"We have high-fidelity mannequins that are controlled remotely by instructors, who can create a wide range of scenarios in which the mannequin displays symptoms — such as swelling of the throat and decreasing heart rate — that respond to the students' actions," says Ellen Pringle, education coordinator in the simulation center in the Department of Process Improvement and Quality Education.

"Mistakes are often a powerful teacher, and one important advantage is that simulation provides a safe environment where students can see the final result of their actions. If the outcome isn't ideal, they can learn from it without harming anything or anyone," she explains.

In addition to full-body mannequins, there are task trainers, which represent only part of the body, such as the spine, and are designed to teach specific tasks, like lumbar puncture. There also is computer-based training, some of which connects to a mannequin as well. Simulated scenarios often are video recorded so instructors can review decisions and actions with students.

Much of the training is conducted in a new, 15,000-square-foot simulation facility. However, mock situations can be staged in the hospital and clinics using wireless mannequins. And MD Anderson's sophisticated da Vinci Robotic Surgical System used for several cancers has a simulator that allows physicians to practice when patients are not scheduled.

"Much like pilots aren't allowed to fly until they complete a certain number of hours in a simulator, our surgeons can't use the robot on patients until they master their skills in the simulator," says Garrett Walsh, M.D., professor in the Department of Thoracic and Cardiovascular Surgery and



Ellen Pringle is an educator with an unusual classroom, MD Anderson's new simulation center, where life-size dummies breathe and react to medical procedures. Here she helps students like Staci Eguia, clinical nurse in the Critical Care Unit, learn and keep their skills for performing life-saving procedures on patients. Pringle ensures that Eguia intubates a patient correctly.

head of Perioperative Enterprise. He directed some of the funds from a generous donation by Jay Eisenberg, an associate member of MD Anderson's Board of Visitors, and his wife, Lori, to the purchase of the simulator.

3-D images offer new dimension

While simulation will continue to focus on skills training, its use is expanding into areas such as team dynamics.

"Caring for patients is complex and often requires people with different expertise working together," Botz says. "Inter-professional simulation goes beyond tasks to improving communication and teamwork."

Walsh thinks this aspect is particularly helpful for surgeons. "Medical school and residency is so competitive that it can be difficult for those entering practice to shift to working as part of a team. But you're not a lone ranger in the operat-

ing room, so practicing how to communicate and work effectively with others is critical for achieving the best outcome for patients."

In the future, Annie and her pals may be replaced with the next generation of simulators: three-dimensional graphics, which allow students to virtually peel away layers of skin and muscle to see the inner workings of body structures and how they respond to student actions.

No matter where simulation goes in the future, it's helping save lives today. "When I'm the one trying to save someone's life, I know the practice I've gotten through simulation makes me more capable, so I place tremendous value on that training," Eguia says.

A 'WHOLE' IN ONE CENTER

By Maggie Newell

Lorenzo Cohen, Ph.D., practices what he teaches.

Exposed to Asian philosophy at a young age, the director of MD Anderson's Integrative Medicine Program learned mind-body practices at his grandmother's knee.

"She was a vegetarian, a yoga master and, most important, led a yogic life," says Cohen, professor in MD Anderson's departments of General Oncology and Behavioral Science. "I was surrounded by that every summer I spent with her in Italy."

His childhood culture led to a doctorate in medical psychology, where he looked at the negative effects that stress can have on biology and health. When he joined MD Anderson in 1997 and shifted his focus to oncology, he realized that patients with cancer suffer from tremendous stress. So he set out to develop resources to help them manage their cancer experience.

As he and his colleagues expanded their work, they discovered that reducing stress and improving patients' overall health would likely improve clinical outcomes.

It's a passion that drives Cohen to this day and has led to significant growth in the clinical services and research efforts of the Integrative Medicine Program.

Integrative, not alternative

Education for patients and health care providers is essential to the program's efforts.

"When the program began, there was a misperception that integrative medicine advocates and prescribes unproven things for patients to do in place of standard medical care," Cohen says. "That's what alternative medicine is. It has nothing to do with us."

Weekly professional meetings, internship and observership programs, training conferences and patient outreach continue to spread the word about integrative medicine. And, in 2013, the program is launching the Integrative Oncology Training Conference for Health Care Professionals.

These efforts increase awareness of and draw attention to the importance of an integrative approach to patient care: supporting the whole patient through a combination of oncologic treatments and massage, acupuncture, mind-body approaches, physical activity, nutrition support and other approaches.

A patient-centered philosophy

Part of the increased interest in integrative medicine comes from an increased understanding of how people's lifestyles affect their health.

"Research increasingly shows that lifestyle choices have a dramatic influence on cancer-related outcomes," Cohen says. "From initial risk of disease to how well a cancer treatment works, physical activity, appropriate diet, having a healthy weight and managing stress are important factors in predicting response to treatment and favorable or unfavorable outcomes."

"We create a comprehensive approach to each patient's cancer treatment," says Richard Lee, M.D., clinical medical director for the Integrative Medicine Center. "We collaborate with the oncology teams to build that plan because our philosophy is truly integrative. We look at the conventional care plan together with treatments that aren't traditionally part of that plan, but that ultimately can improve their well-being."

The center offers individual consults for patients with a medical oncologist. It provides massage therapy, music therapy, acupuncture, meditation and clinical nutrition support, as well as a number of group programs.

"We think about patients' physical, mind-spiritual and social health. We really focus on having a conversation with patients to learn their goals and create an optimal plan for them, even in the middle of treatment, to improve their outcomes," Lee says.

The team also leverages other institutional resources, such as chaplains, patient advocates, social workers and the Smoking Cessation Program, to create a whole-patient plan.

"We take advantage of every tool available to us to help each patient," Lee adds.

Integrative medicine addresses each patient's physical, mind-spiritual and social health



Lorenzo Cohen, Ph.D., director of the Integrative Medicine Program, speaks to groups about integrative medicine and the importance of combining oncologic treatments with massage, acupuncture, mind-body exercises, physical activity and nutrition support.

Tried and true

Most important, integrative medicine uses only methods that have been scientifically proven to be effective. The program's researchers — Cohen, Lee, Peiyang Yang, Ph.D., and Alejandro Chaoul, Ph.D., assistant professors in the Department of General Oncology — have pursued studies in acupuncture, mind-body therapies and natural products. Recently, they launched a research program to investigate comprehensive lifestyle changes. Each research area offers significant potential in helping to improve the whole-patient experience.

For instance, Cohen's research with acupuncture in symptom control showed a significant reduction in dry mouth for patients with head and neck cancers (see *Cancer Briefings*, page 29). And his research with mind-body medicine showed that incorporating yoga into treatment plans of women undergoing radiation therapy improved their physical functioning, general health perceptions and ability to find meaning in the illness experience.

Equally important is separating the wheat from the chaff, especially with natural products. Lee observes that patients often think of herbs and drugs differently.

"I tell patients that morphine is derived from a plant. But when it's processed into a pill, it's suddenly a medicine, not a plant," Lee says. He adds that supplement use may cause unintended interactions, and that one of the biggest concerns is the risks that exist when medicine, herbs and supplements are combined without health care guidance.

"All our natural product research is being investigated like any novel drug discovery," Cohen explains. "Every natural product Dr. Yang is investigating, such as fish oil, sweet gum and sweet leaf tea, is actually a very potent therapy that targets multiple cancer-related pathways."

With the new, larger Integrative Medicine Center and plans to expand clinical care staff, the Integrative Medicine Program is poised to grow.

"We want to meet the needs of our patients, make a difference in their care using an evidence-based approach and increase our understanding of this approach through research," Lee says.



Patients often arrive at the Integrative Medicine Center carrying bottles of dietary supplements. Richard Lee, M.D., medical director of the center, helps them assess and understand what they are taking. He also helps them design a comprehensive approach to their cancer treatment.

When the pipeline dries up

Pharmacists ramp up efforts to counter drug shortages

By Jacqueline Mason

Health care organizations in the United States continue to face national shortages of medicines used to alleviate pain, prepare patients for surgery (anesthetics) and treat diseases like cancer.

MD Anderson has fared better than many organizations in obtaining supplies but is not immune to national shortages of injectable chemotherapy drugs.

“While the majority of patients are not affected, there’s a small subset of patients who are,” says Joel Lajeunesse, vice president for pharmacy. “They need to know we’re doing everything possible to keep the shortage from impacting their care in any way. If we can’t prevent the shortage, we’re finding the most suitable drug alternative to give them the best possible outcome.”

Shortages have been triggered by problems in the manufacturing industry. Some manufacturers contend with their own shortages of raw materials, while others have stopped production lines because of quality concerns or for financial reasons. Not all of them have found it viable to return to production.

MD Anderson purchases a significant volume of the nation’s cancer medications and works only with reputable wholesalers. In some instances, shortages are temporary and the institution can borrow supplies from neighboring hospitals in the Texas Medical Center.

“With many legitimate wholesalers, there’s an allocation system,” Lajeunesse explains. “If you normally buy 80% of a product, you’re likely to get 80% of whatever supply they have. It helps us at MD Anderson because oncology treatments are what we do. We tend to get a larger share of the first new releases.”



Pharmacists Tunisha Hill (front, left) and Hong Tram (front, right) verify all doses prepared for patients in the Ambulatory Treatment Center. They also provide a third check on chemotherapy orders for the triple-check process. These doses are prepared by technicians like Freddie Stovall (back, left) and Ryan Thorpe (back, right).

Staying ahead of shortages

In the case of cytarabine, pharmacists at MD Anderson averted the shortage by buying supplies ahead of time. This is a markedly different approach from the past when hospitals sought to maintain just-in-time inventory.

“Once you realize a drug has a potential supply issue, you have to abandon that model and do what you can to procure a steady stream of that drug,” Lajeunesse says. “If it means buying multiple days or a larger purchase, assuming it’s available, you do those things until you see the supply for that drug has stabilized.”

MD Anderson has established a dedicated team of pharmacists, called drug information clinical pharmacy specialists, to monitor potential shortages and alert physicians to the probable impact.

Wendy Heck, Pharm.D., who leads the team, has seen the number of national drug shortages steadily climb during the past five years. Nearly 30% of all shortages currently involve oncology medications.

“The drug information team meets weekly to assess the pharmaceutical environment,” Heck says. “When a drug situation escalates beyond a temporary or easily addressed shortage, we conduct a clinical assessment to explore safe and effective substitutions.”

Physicians are brought into the conversation through the pharmacy and therapeutics committee, which meets monthly to ensure the safe, rational and effective use of medications at MD Anderson.

“Safety of patients is number one,” says committee chair John Araujo, M.D., Ph.D., assistant professor in the Department of Genitourinary Medical Oncology. “We have a lot of people monitoring shortages and watching what is going on both nationally and internationally.”

In the fall, the committee selected epirubicin as an effective though expensive alternative to doxorubicin for treating breast and other cancers. The shortage was temporary and has since been resolved with imported supplies.

But in shortages of other drugs like etoposide, which is used to treat testicular cancer, it’s proven more difficult to find equally effective substitutions. This also was a longer-term shortage, requiring therapy changes by physicians.

That’s where multidisciplinary expertise is especially valuable, Araujo says. MD Anderson has experts working collaboratively in all fields of oncology to provide the best courses of treatment for patients. Knowledge sharing also goes on between the physicians and pharmacists. The drug information team maintains an intranet site that displays which medications are sufficiently available at MD Anderson, potentially limited or altogether unavailable.



Joel Lajeunesse, vice president for pharmacy, and Kelley Reece, charge pharmacist for the Ambulatory Treatment Center, discuss technologies being developed that could enhance pharmacy production and efficiency for better patient care.

Keeping the supply chain unspoiled

In October, the government gave the U.S. Food and Drug Administration (FDA) greater authority to obtain advance notifications from drug manufacturers of expected shortages. It also has loosened regulations for the temporary importation of the pharmaceutical equivalent of doxorubicin and for preservative-free methotrexate, which is used to treat pediatric leukemia.

The new supplies are deemed to be of adequate quality to enter the U.S. supply chain.

If shortages weren’t enough, the FDA is also investigating reports of counterfeit cancer medications such as bevacizumab (marketed in the U.S. as Avastin) entering the national supply chain. Avastin was never in short supply, but some grey market distributors find profitability in selling ineffective imitations of the prescription medication.

MD Anderson never works with grey market distributors, says the pharmacy team, which nevertheless checked — and found safe — the integrity of the institution’s Avastin supplies.

Cancer Briefings

PLANTING SEEDS TO SHAPE THE FUTURE

AT&T contributes \$1 million to telesurgery program

By Lindsey Garner

In March, the next generation of health care leaders witnessed the future of telemedicine in action: telesurgery.

Through the AT&T/Junior Achievement Worldwide Job Shadow Initiative, 30 students from the DeBakey High School for Health Professions and The Woodlands High School, both in the Houston area, visited MD Anderson to learn about a new telesurgery program funded by AT&T.

During the visit, AT&T presented a \$1 million contribution to the institution's telesurgery initiative. The program will become a platform to extend MD Anderson's specialized surgical expertise to rural and underserved communities, with an emphasis on building new collaborations and developing mentoring programs that advance cancer surgery.

Learning by example

During the visit, MD Anderson faculty and leadership spoke to the students about their work, the education that prepared them for their careers and the future of medicine.

"High school was the seed for me to ultimately become a physician," says Ronald DePinho, M.D., president of MD Anderson. He encouraged the students to "work hard, focus and embrace knowledge."

On department tours, students learned which job skills they need to be successful in various health care professions.

In the Head and Neck Center, they watched facial prosthetics being made. Patti Montgomery, an anaplastologist, showed them how a prosthesis is created just like a "piece of art" and is unique to each patient.

In addition to technical skills and training, students learned how important patient care skills are from Ivy Robinson, clinical supervisor in the Department of Radiation Oncology.

"Patients look to you to give them hope," Robinson says.

Above: Patti Montgomery, an anaplastologist, shows silicone facial prosthetics to students (from left) Andrés Zavala, Mario Quach, Zubin Colah and Dylan Smith. Each prosthetic is custom made for patients. "Everybody is like a puzzle," Montgomery says. The detailed design and production process can take up to a week.

Left: Students watch a live telesurgery demonstration with a remote site in California, which Chris Holsinger, M.D., associate professor in the Department of Head and Neck Surgery, describes as "Playstation meets 'Grey's Anatomy.'"





Students from The Woodlands High School, who are considering futures in health care professions, speak to MD Anderson faculty about their work and the education that prepared them for their careers. Faculty include (from left) Pamela Soliman, M.D., Robert Satcher, M.D., Ph.D., Kathleen Schmeler, M.D., all assistant professors in the Department of Gynecologic Oncology and Reproductive Medicine, and Chris Holsinger, M.D., associate professor in the Department of Head and Neck Surgery.

A plan of action

Led by Chris Holsinger, M.D., associate professor in the Department of Head and Neck Surgery, and Robert Satcher, M.D., Ph.D., assistant professor in the Section of Orthopedic Oncology, the telesurgery program will roll out in three phases during the next five years.

Phase one will involve pre-operative consultations between surgeons at MD Anderson's campuses in the Texas Medical Center, Katy and Sugar Land. This will serve as a testing ground for telesurgery technologies and equipment.

In phase two, MD Anderson surgeons will coach, observe and teach other surgeons in the community.

During the last phase, MD Anderson surgeons will participate in distant surgeries, using robotic surgical instruments, and collaborating with surgical teams at other facilities. Holsinger has already coordinated several telementoring events during head and neck/thyroid procedures with surgeons in Brazil.

With AT&T's support, both the telesurgery program and students have the potential to shape the future of surgical oncology at MD Anderson and beyond.

WHEN IT'S HARD TO SWALLOW

Study shows acupuncture prevents dry mouth

By Lindsey Garner

While a lack of saliva may seem like a minor inconvenience, xerostomia (severe dry mouth) greatly impairs patients' quality of life. It creates difficulties for everyday functions, like eating, speaking and sleeping. Without saliva, patients also run the risk of increased bacterial growth, bone infection and nutritional deficiencies.

A recent study shows that acupuncture, when given alongside radiation therapy for head and neck cancer, reduces xerostomia.

The randomized, controlled trial compared acupuncture to standard care among patients with nasopharyngeal carcinoma, a common throat cancer.

"We found incorporating acupuncture alongside radiation therapy diminished the incidence and severity of this side effect," says the study's principal investigator Lorenzo Cohen, Ph.D., professor in MD Anderson's departments of General Oncology and Behavioral Science, and director of the Integrative Medicine Program.

The study was part of a \$2.7 million center grant from the National Cancer Institute. Researchers from MD Anderson and its sister institution, Fudan University Shanghai Cancer Center in Shanghai, China, where the study was conducted, contributed to the study.

Additional NCI-supported collaborative research is ongoing, including two large trials, one being conducted in Shanghai and at MD Anderson, and another across multiple centers in the United States.

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A collection of artistic opportunities



In 2006, when Jennifer Wheler, M.D., approached her new boss with a proposal to create an art program for cancer patients, Razelle Kurzrock, M.D., wasn't immediately sold on the idea.

"I'm scientifically oriented, not artistically inclined, so it took me a while to warm up to the idea," says Kurzrock, professor and chair of the Department of Investigational Cancer Therapeutics. She came to love the concept when she realized art might take her patients' minds off their diseases.

And COLLAGE: The Art for Cancer Network was born. Wheler, assistant professor in the department and founder of this 501(c)(3) nonprofit organization, says it not only takes patients' minds off their illnesses, but also allows them to explore their conditions and how their diseases relate to their identities.

"As wonderful as MD Anderson is, many patients struggle with the feeling that they've become a piece in a machine. They feel they've lost part of their identities by becoming cancer patients," Wheler says. "But through art, we can restore a feeling of individuality."

Simple, but unique

Wheler, who has an undergraduate degree in art history, says the program works because it's simple.

Six professional artists from the Houston community, with talents in collage, painting, drawing, book making, photography, Chinese ink art and creative writing, work one-on-one or in groups with patients, survivors and family members.

The program invites participants to the Integrative Medicine Center twice a month for workshops to create works of art. For repeat visitors, it builds a sense of community. In addition, an artist-in-residence program brings the artists into outpatient waiting areas and to the bedside of critically ill inpatients.

Like Kurzrock, many patients don't initially think of themselves as artistic. "But once they embrace the experience, their artwork becomes precious to them," Wheler says, recalling a patient who carried his artwork with him in his briefcase.

The program is supported by donations from people, corporations and foundations. The contributions pay for art supplies and stipends for some of the artists, while others offer their time pro bono.

"Just as physicians are compensated for their expertise, it's important that we recognize the meaningful work of these talented artists," Wheler says.

And it does take exceptional skill and time to guide people through self-expression. Sessions can be brief — as is the case when an artist goes to a waiting room to help outpatients pass the time until their next appointment — or can last for hours when artists visit inpatients who are nearing the end of life.



Artist Maureen McNamara works with patient Corrine Lockett on a beading project as part of the COLLAGE program at MD Anderson.

Capturing a patient's essence

Marcia Brennan, Ph.D., is an associate professor of art history and religious studies at Rice University in Houston. She's also an artist-in-residence for COLLAGE. Brennan applies her skills as a creative writer when she visits critically ill inpatients. She and visual artist Lynn Randolph translate patients' reflections on their lives into words and images. The finished product often is placed in a book that's given to the patient or family and treated as a keepsake (see page 30 for an example).

"There are many ways people at the end of life perceive the sacred within the familiar and ordinary — from the flowers in their gardens to visits with grandchildren to their own experiences with angels and divine presences," Brennan says. "These interactions have changed my perspective profoundly, both as a scholar and as a person."

Eduardo Bruera, M.D., professor and chair of the Department of Palliative Care and Rehabilitation Medicine, says these interactions help patients cope with the stress of their situation. But, he adds, they are beneficial for his staff, too.

"Care providers are relieved when the artists can come capture a patient's story and help that person leave a legacy," he says.

The program also assists health care providers by coordinating guided tours of local museums. "As a result, my staff accepts art as a valuable tool for diffusing stress in their own lives," Bruera says.

A different kind of personalized care

Wheler notes the program shouldn't be considered art therapy.

"We don't have a specific outcome in mind," Wheler explains. "Our focus is on the quality of the interaction between the artist and the patient. We introduce the patient to the power of self-expression, regardless of the output."

Wheler sees this aligning with the institution's goal to provide personalized cancer care. And she says she's grateful for the support of Kurzrock and Bruera, who recognize the connection. Both are on the program's board of directors.

Kurzrock no longer has doubts. "The feedback from patients and staff has been terrific," she says. "Patients get this unique attention and empowerment, and we all see the positive changes in the patients' attitudes."

To date, more than 3,500 people have participated in the program. To learn more about COLLAGE, view the program's website, www.collageartforcancer.org.



Scan this QR code to learn more about COLLAGE, or visit www.mdanderson.org/conquest.



If you were to look through 22-year-old Jameisha “Meisha” Brown’s resume, you’d find page after page of honors and awards, hours of volunteer work and community service, and an array of certifications in education and research.

What you won’t find, though, is that in 1998, Brown was diagnosed with Burkitt’s lymphoma — a rare, aggressive form of non-Hodgkin’s disease usually found in children.

Three weeks into the summer after second grade, Brown experienced tremendous pain and discomfort. Her mother had her screened by her pediatrician. Then, shortly after the initial diagnosis, doctors discovered a liquid tumor in the young girl’s abdomen. A few hours later, Brown was admitted to MD Anderson to begin treatment.

“Cancer turned out to be a demand on my potential,” Brown says. “Sometimes there has to be this demand for you to produce. I couldn’t feel sorry for myself. I had to do something about this thing called cancer.”

During the next year, she underwent multiple surgeries, chemotherapy and radiation. What she remembers most, however, is how her condition changed her point of view and directed her passions.

“At the tender age of 8, dying was all I knew about cancer. I turned what I thought was a death sentence into the will to live a fulfilling life,” she says. “If we really dig deep within ourselves, we’ll be astonished with what we can conquer.”

‘My future chose me’

Today, Brown is a senior at the University of Houston working toward a bachelor’s degree in health promotion. She keeps busy as the president and health fair coordinator of the Collegiate Cancer Council, as a research fellow at The Methodist Hospital and as an active volunteer in the community.

“If not for the cancer, I still feel I would have ended up in a similar place. My future chose me. This is where I’m supposed to be. These are my passions,” she says.

Since February 1999, Brown has shown no evidence of cancer. She continues check-ups with her doctors at MD Anderson and doesn’t let cancer slow her down.

Brown’s passion for Making Cancer History® has led her to participate in numerous programs and organizations. Since a month into her treatment, Brown has worked with MD Anderson’s Children’s Art Project, allowing her creativity to grow. She also received a CAP scholarship aiding her tuition costs during her four years at the University of Houston.

“You always have to find ways to encourage yourself,” Brown says. “Even in your darkest moments, there’s still light. I’m a living testimony and a life to be continued.”

After graduation, she plans to carry on volunteering and says her education is only beginning. She has a long-term goal of holding a citywide health fair, offering free screenings to people of all ages.

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REGIONAL CARE CENTERS

Greater Houston area: Bay Area (Nassau Bay), Katy, Sugar Land, The Woodlands

EXTENSIONS

Banner MD Anderson Cancer Center (Gilbert, Ariz.)

MD Anderson Radiation Treatment Center at American Hospital (Istanbul, Turkey)

MD Anderson Radiation Treatment Center at Presbyterian Kaseman Hospital (Albuquerque, N.M.)

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