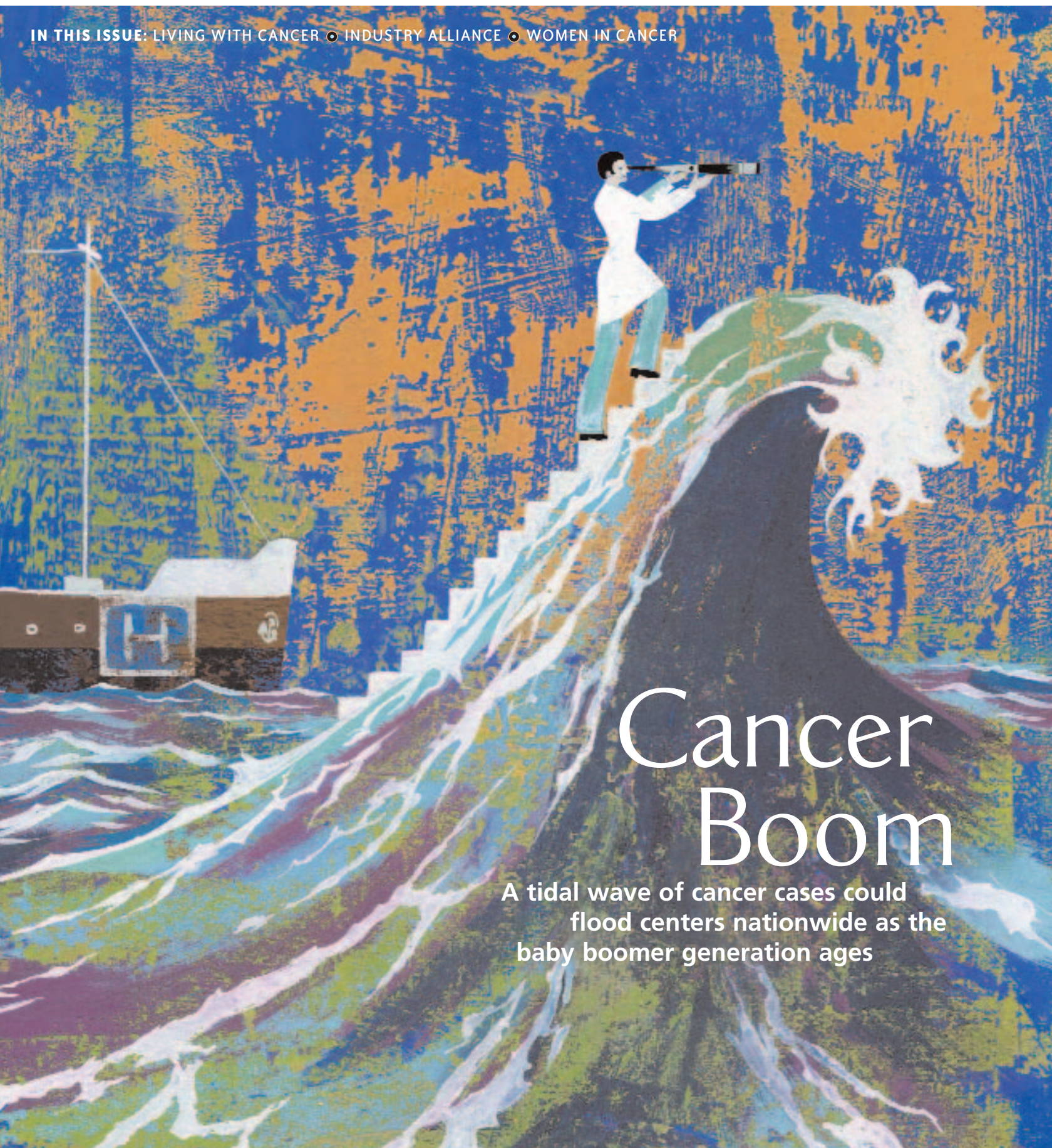


Moving toward a future without cancer.

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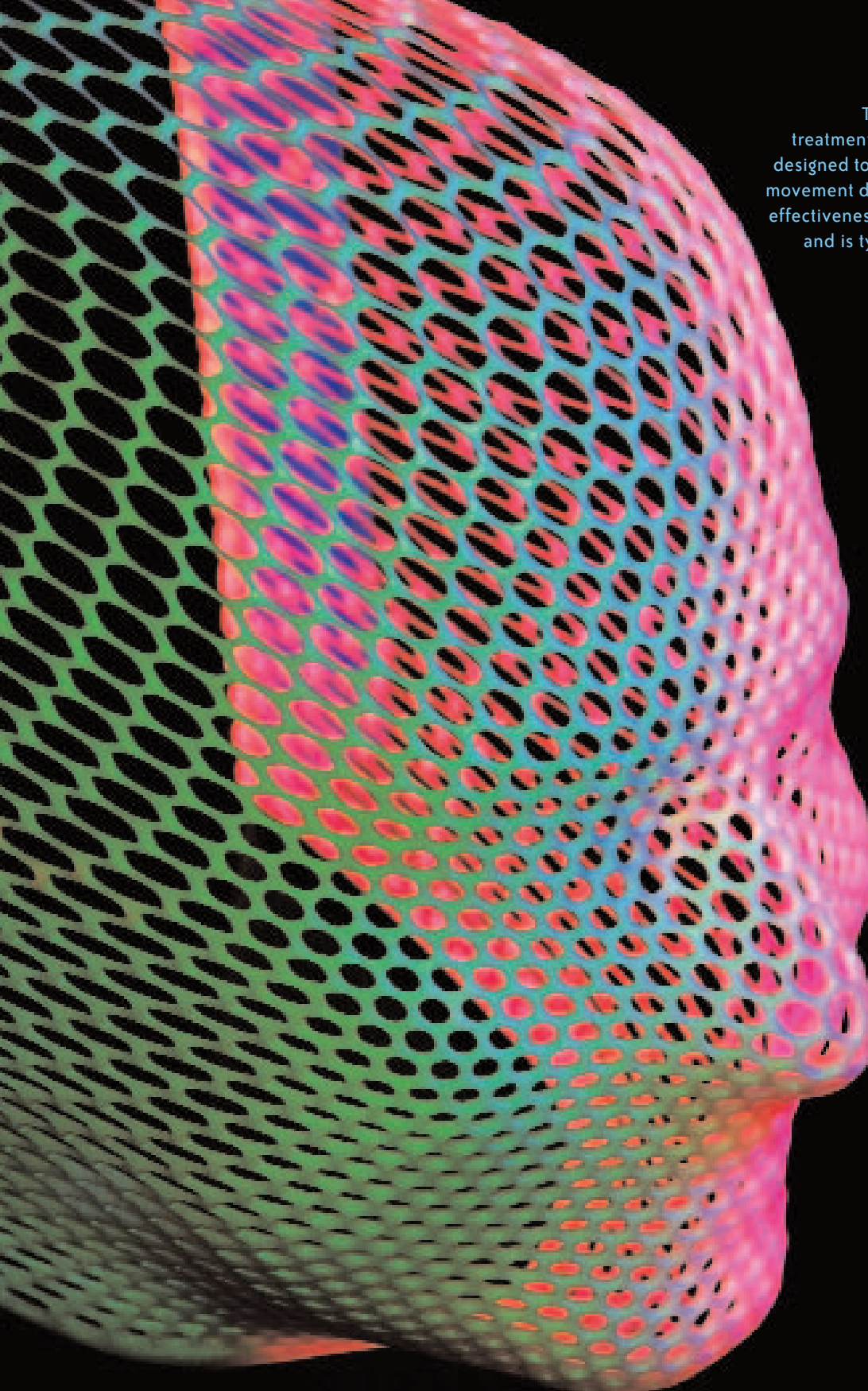
momentum

IN THIS ISSUE: LIVING WITH CANCER • INDUSTRY ALLIANCE • WOMEN IN CANCER



Cancer Boom

A tidal wave of cancer cases could flood centers nationwide as the baby boomer generation ages



Pictured here:

The Aqua-plast mask used in radiation treatment is a moldable plastic that is specially designed to fit each patient. The mask helps limit movement during treatment, which could alter the effectiveness and accuracy of the radiation beam, and is typically used in treating head, neck or brain cancers. (see story page 10)

PHOTO BY NEIL BRAKE

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Director's letter

One of my goals two years ago when I became the Director of the Vanderbilt-Ingram Cancer Center was to have us all do a better job of connecting with patients, family members, the general public and each other. Everyone involved with cancer has a story, and sometimes sharing and understanding these stories can aid in our approach to this disease that affects so many. Therefore, I feel extremely proud and fortunate to present this first issue of *Momentum*, an enhanced means of communicating by Vanderbilt-Ingram.

Cancer, we know, strikes from many directions. It forces people like celebrity NASCAR driver Bobby Hamilton Jr. off the road for an extended period of time in order to face a new and more frightening adversary. In this issue, he discusses his personal battles since being diagnosed with and treated for head and neck cancer.

College student Jarrett Stein probably never thought he'd have so much in common with a racecar driver. Diagnosed with non-Hodgkin's

lymphoma when he was a 15-year-old happy-go-lucky, typical teenager, Jarrett shares not only his experience as a patient, but as a survivor.

Last year, for the first time, the number of cancer deaths in the U.S. declined. Now that we are gaining momentum against the disease, we at Vanderbilt-Ingram have recognized the crucial role that survivorship plays, and we are devoting new efforts toward the issues surrounding survivorship.

In addition to connecting with these patients and with those who have shared their stories in "Living with Cancer: A Roadmap for the Future," we also want our readers to get an inside look at the people who work

All of these stories, we hope, will
spawn cross-communication
between those of us at the
Vanderbilt-Ingram Cancer Center
and those we intend to serve.

behind the scenes at the Cancer Center – people like researcher Kim Johnson, whose expertise in tissue culture provides a critical link in the discovery and treatment chain.

We'd like to offer a glimpse into the broader picture of life beyond the walls of Vanderbilt-Ingram. *Momentum* editor Heather Hall has interviewed various women physician/scientists, who give unique and candid perspectives on what it means to be female and at the top of their fields in a historically male-dominated profession.

And Elizabeth Older examines the impending challenges faced by physicians and scientists as a burgeoning population of baby boomers enters the age range that puts them at an increased risk to develop cancer, and yet federal funding for cancer research is on the decline.

All of these stories, we hope, will spawn cross-communication between those of us at the Vanderbilt-Ingram Cancer Center and those we intend to serve. Defeating cancer will never be a one-horse show. It will always require the sharing of hearts and minds and resources. Please let us know what you think about our attempts to reach you in this way. Welcome to *Momentum*.

Ray Durbob

ACLOSERLOOK

KIM JOHNSON

Senior Research Specialist, Vanderbilt-Ingram



PHOTO BY DEAN DIXON

IN A BUSTLING LAB TUCKED AWAY ON THE BACK SIDE OF THE SIXTH FLOOR of the Vanderbilt-Ingram Cancer Center, a 25-year veteran of Vanderbilt has been receiving and analyzing tissue that could one day hold the key to conquering cancer.

Her name is Kim Johnson. She's a Senior Research Specialist who has had a hand in a great deal of the tissue used at Vanderbilt-Ingram for the last 12 years. "Any tissue that anyone uses here in the laboratory, I pretty much deal with," said Johnson.

Her boss, Jennifer Pietenpol, Ph.D., whose lab is currently researching breast cancer, said Johnson does thousands of different things in her lab, but tissue is her strong suit. "Her knowledge of tissue, from acquisition to processing, is invaluable," said Pietenpol.

Roy Jensen, M.D., director of the Kansas Masonic Cancer Research Institute at the University of Kansas Medical Center, and a previous Vanderbilt employee, continues to be a mentor to Johnson. He's the person responsible for hiring her as one of the first employees of Vanderbilt-Ingram. Jensen said Johnson played a major role in building the tissue acquisition department at Vanderbilt-Ingram. "She's a tremendous asset, not only for her knowledge of tissue collection and histology, but she's also extraordinarily enthusiastic and supportive of research and of PI's [primary investigators] trying to do new things," said Jensen.

One of Johnson's primary roles in tissue acquisition is collecting and studying normal, human breast tissue collected from breast reduction surgeries performed at Vanderbilt. "We acquire normal breast tissue from reduction mammoplasties to understand what signaling is normal in a cell, and that gives us clues to what goes wrong in a tumor cell," said Pietenpol.

Johnson's job is to isolate single cells from the tissue samples. "I look at how these cells grow, die, and the intercellular changes in hopes that we can mimic what cells do in the body," explained Johnson. "We can cause those same gene alterations that happen when cancer starts," she added.

Pietenpol said Johnson is also known for her caring and generous way with others in the lab, and said she always shows up with a smile on her face. "She has a real sense of responsibility, but a great sense of decency and caring. She has hundreds of friends and family members and she is loyal to her colleagues here at work and very loyal to her friends and family."

Johnson also plays something of the mother hen or keeper of the lab to the numerous students who come and go from Vanderbilt-Ingram. "I'm the lab momma, I think," said Johnson.

Her own family's experiences with cancer have fueled her passion for research. Johnson's mother survived kidney cancer, but both her mother-in-law and her stepfather died within the past year from cancer. "What we're doing here in the labs now hopefully is going to alter treatment and diagnosis. The ultimate goal is to make this applicable to patients by extending lives. Somebody who is dear to me, their treatment could be a direct response from something that has happened here in the Cancer Center." •

— by Heather L. Hall



Landy.



cancer BOOM

If we could calculate the place and time of a natural disaster threatening to cause unprecedented injury and death, we no doubt would take action to protect ourselves and limit its impact.

In the United States today, we are facing such a threat. It won't be followed on the Weather Channel, but rather in medical offices and hospitals across the country. The largest population bulge in America's history is about to hit the health care system like an enormous tidal wave, as millions of baby boomers flow into the age range ripe for developing cancer and other diseases.

So far, no flood walls have been raised, no action plan put in place. But health care experts see the rising tide, and they're trying to get a handle on what will be needed to deal with the overflow of baby boomers growing older.

"The problem is that nobody seems to be responding to get ready for this," observes Raymond N. DuBois, M.D., Ph.D., and director of Vanderbilt-Ingram Cancer Center. "An analogy is the Katrina disaster. **These people are going to have a lot of needs to be met.**"

*By Elizabeth Older
Illustration by Philippe Lardy*



WADING INTO TROUBLED WATERS

This year, Americans at the leading edge of the baby boom generation – born 1946 through 1964 – turn 60. This group includes our two most recent presidents – George W. Bush and Bill Clinton – as well as Cher, Dolly Parton and a host of other well-known individuals and regular folks. In five short years, that first wave of baby boomers will hit 65, the age at which cancer incidence and mortality start to climb.

“The baby boomers are coming into the age when the risk of developing and dying from cancer escalates quite sharply,” explains Harmon J. Eyre, M.D., chief medical officer of the American Cancer Society.

For all cancers combined, the incidence of cancer is 10 times greater for people 65 or older. Older cancer patients are 16 times more likely to die from the disease than their younger counterparts.

By the time the last baby boomers reach 65 in 2030, the number of individuals in the United States who are that age and older is expected to double, from about 35 million to 70 million. By then, the group that is 85 and older is projected to reach about 9.6 million, more than double the number in that age range at the turn of the century.

All this signals a big cancer hit coming down the tracks, with twice as many people expected to get that diagnosis – about 2.6 million – by 2050. But, from a different viewpoint, cancer related to aging is already making an impact.

“Cancer is the leading cause of death among all Americans in the workplace,” explains Eyre. The most common cancers start occurring more frequently when people hit 50, he says – just where a large number of the baby boomers are now.

Eyre thinks the synergy of an aging population mixed with the growing cost of health care and the baby boomers hitting Medicare eligibility age may create the proverbial “perfect storm.”

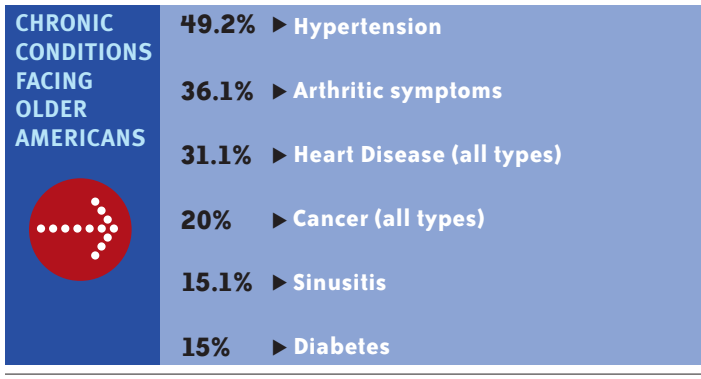
“We think it’s going to cause the system to collapse,” he says, explaining that health care reform and universal insurance coverage need to be addressed to avoid this potential dark scenario. With better access to regular checkups that can help ensure early detection, more cancers can be prevented or found early, when treatment is both cheaper and more successful, he explains.

“We think all Americans have to have health care access,” Eyre says.

“I think what we’re lacking is just an action plan,” observes DuBois, who is an internationally recognized scientist in colon cancer research and the B.F. Byrd Professor of Molecular Oncology at Vanderbilt-Ingram. “I guess the real question is, who should take the lead?”

Traditionally, the federal government has done this job, supporting the war on cancer and other public health efforts by funneling dollars through national agencies like the Centers for Disease Control and Prevention and the National Institutes of Health. But federal funding to fight cancer, which will directly impact one in three Americans, has stalled 25 years after President Richard Nixon led the national charge against this dreaded disease.

The budget proposed by President George Bush for the NIH in fiscal year 2007 was essentially unchanged from the previous year, at



*U.S. Dept. of Health and Human Services

\$28.6 billion. And the NIH funding slice for the National Cancer Institute – the nation’s principal agency for cancer research – is expected to continue to decline, from \$4.83 billion in fiscal year 2005 to an anticipated \$4.75 billion in fiscal year 2007. When adjusted for inflation, the budgets of both agencies will see a significant drop.

Public health experts and cancer researchers feel especially buffeted by this federal budgetary trend after experiencing a doubling in NIH funding from 1998 through 2003. That investment preceded the good news this year that cancer death rates for all Americans continue to decline, following a downward trend that began in the early 1990s. And the rate of new cancers has remained stable during this same reporting period (1992-2003) even as the American population both aged and grew.

In addition, recent research breakthroughs hold the promise of great progress toward understanding the basic biology of cancer and devising treatment approaches that will manage it for a lifetime, or perhaps, even prevent it altogether.

“I think the bright side is that we are making continual inroads into our understanding of cancer and how cancer comes about in the first place,” says Vanderbilt-Ingram’s Deputy Director David H. Johnson, M.D.

But these very breakthroughs make lagging federal funding hard to take, says DuBois, because they have revealed so many promising avenues in the battle to beat cancer, but will require adequate funding to explore.

GETTING READY FOR THE PATIENT FLOOD

Public health experts for a few years have been tuned into trying to determine the health care impact of the aging baby boomers. In 2001, researchers met in a workshop sponsored by the NCI and the National Institute on Aging to develop goals to specifically address aging and cancer. This initiative was aimed at accelerating research in seven identified areas. It was funded with a five-year grant program totaling about \$25 million, explains Ernest T. Hawk, M.D., M.P.H., and director of NCI’s Office of Centers, Training and Resources. Eight cancer research centers received these planning grants and are at work on a wide range of the most challenging aging-and-cancer issues, including comorbidity, treatment efficacy and tolerance, the prevention and management of cancer, and the biology of aging.

Reflected in design of these programs, as well as in research throughout the NCI-funded Cancer Centers, is what Hawk calls a



PHOTOS BY NEIL BRAKE

Recent research breakthroughs hold the promise of great progress toward understanding the basic biology of cancer and devising treatment approaches that will manage it for a lifetime, or perhaps, even prevent it altogether.

Diabetes Association and the American Heart Association, will be using the models to help them positively influence and manage this impact, he says.

“We know it will be substantial,” says Eyre.

However, these future-look efforts are taking place in a time of retrenching for cancer research, as NCI continues to assess its programs to decide how to allocate its curtailed funds.

“We have a fairly robust portfolio of basic science grants,” observes Hawk. But he says maintaining the current level of translational research – which has, as its goal, linking laboratory discoveries to clinical therapies – will be challenging with fewer dollars to go around.

“Those sorts of things can be difficult to sustain,” he says.

LEANING ON THE LEARNING CURVE

The good news is that the incidence of cancer – to researchers, the number of people out of 100,000 who develop the disease – has remained stable since the early 1990s. But even though the

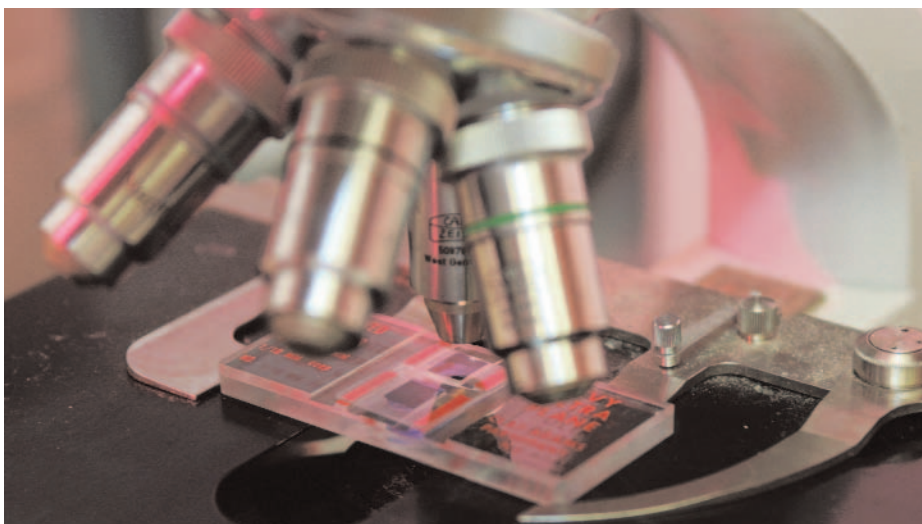
individual cancer rate is not rising, the big boomer group will push up the nation's overall cancer burden as they move into old age.

Observers worry about a range of issues when considering how to meet the health care needs of this supersized generation, including whether we'll have enough oncologists and other specialists to treat them and if patients will be able to pay for care.

And older cancer patients carry their own set of special circumstances. They often suffer from one or more chronic conditions, with hypertension, arthritis and heart disease leading the list. These other diseases – called comorbidities – make treating their cancer more complicated.

“They may not be able to tolerate the level of therapies of younger patients,” says DuBois.

And while patients in the United States aren't excluded from clinical trials based solely on age, they don't participate in great numbers. This means the learning curve may be steeper for managing the side effects of new cancer drugs and therapies for older patients.



PICTURED ABOVE: Researchers at Vanderbilt-Ingram are working to speed discoveries from bench to bedside to offer patients of all ages more options.

“cultural change” in the way researchers are doing business. He calls it “team science,” when projects bring together basic and clinical scientists in a multidisciplinary effort to find and use cancer answers.

In addition, cross-institutional cooperation is promoting information flow from bench to bedside and back again, Hawk says. He points to the partnership between Vanderbilt-Ingram and Meharry Medical College as an example of how institutions can work together to generate and disseminate research aimed at preventing and treating cancer.

“It's not enough to make a new scientific discovery,” Hawk explains. “The other part of that mission is making that into a new clinical tool.”

Several national nonprofits are working on models meant to predict the impact the baby boom generation will have on health care, explains Eyre. The American Cancer Society, as well as the American



But Johnson, past president of the American Society of Clinical Oncology, thinks the knowledge that has been gained about controlling cancer treatment side effects in other patients will translate to older people.

"We always are working on ways of minimizing the complications of therapies," he says, although he agrees that managing comorbidities may complicate treatment.

Hawk says sustaining patient participation in clinical trials remains an NCI priority, and he recognizes the greater challenge of recruiting older individuals.

"Getting anyone to participate requires effort – all the more so, people with co-morbidities at advanced ages," he observes.

But research has shown that age alone is not a predictor of whether a cancer treatment will cause side effects or have a positive outcome,

Johnson says. He advises older patients to insist on exploring all their options to avoid physician bias against aggressive cancer treatment.

"Their doctor decides they are too old or too frail," explains Johnson, director of Vanderbilt-Ingram's Division of Hematology/Oncology.

Regardless of any knowledge gap that remains to be closed, the experts expect help will come from the geriatric sub-specialties and centers that already are in place across the country. And the early detection and prevention efforts – particularly the push to stamp out smoking – which have helped keep cancer death rates from climbing, will continue to play an important role as more people enter the prime age range for developing the disease.

"One of my hopes is that we get much better at early detection," says DuBois. "That's one of the big missions of the Ayers Institute."

Could the United States lose its lead in biomedical research?

Cancer Center Director Raymond N. DuBois, M.D., Ph.D., got an inquiry, but he wasn't interested in moving to Korea. However, some other high-level cancer researchers in the United States have packed up their skills and moved to foreign countries that are committing millions of dollars for cancer and other biomedical research, he says.

"China could do the next new research," DuBois observes.

"That's frightening," says David H. Johnson, M.D., and deputy director of Vanderbilt-Ingram. "What it means is the U.S. no longer views that as a priority."

The National Cancer Institute is anticipating another funding decrease this year, which would be the fourth in a row for the nation's principal agency for cancer research.

NCI Director John E. Niederhuber, M.D., devoted his update in the July 5 *Cancer Bulletin* to the budget issue, noting that the organization's Board of Scientific Advisors sees this as one of the most difficult times in the history of the National Institutes of Health, NCI's parent agency.

"Federal deficits resulting from the events following 9/11 have contributed to unanticipated fiscal pressures that have placed a significant stress on resources assigned to support the country's biomedical research community," Niederhuber wrote. "The single biggest challenge – and the foremost driver of uncertainty for the biomedical research community – is the annual discretionary

budget appropriation supporting NIH and, specifically, NCI."

Some fear the lagging federal funding could cause the United States to lose its position as the world leader in biomedical research, especially now that other countries are heavily investing in it and recruiting researchers from across the globe.

"One of the few things we actually export is medical knowledge," observes Johnson, noting the U.S. cache of Nobel Prize winners. "We're in real danger of losing that preeminence."

Another negative impact, DuBois says, is that the country's cadre of talented researchers may shrink since young trainees won't be able to get funded to do that work. They may choose clinical specialties, such as medical or surgical oncology, instead of devoting 10 to 15 years coming up through the research ranks, he adds.

"For the future, I think it will have a real super-negative impact," says DuBois. "It's going to have a major impact on the quality and number of people who are available to do that kind of work."

"Training has been one of the most preserved areas of all of NCI's budget," says Ernest T. Hawk, M.D., M.P.H., director of the agency's Office of Centers, Training and Resources. This support is necessary to ensure the nation will have enough cancer researchers in the coming years, especially since the looming population bulge will

mean a larger number of people will develop the disease.

The current fiscal climate creates both a challenge and an opportunity, he says.

"The pressure of the current environment is forcing us to reexamine everything we do," he says, noting that cancer professionals, advocacy agencies and the public at large are being asked for input about cancer goals and programs. That process can lead to all parties working together more effectively and productively, he says.

"It's not a happy situation we find ourselves in, but there are opportunities in it," he asserts. "We're trying to minimize the impact of it."

When the American Cancer Society brings 10,000 people to Washington, D.C., to raise awareness of cancer issues, Chief Medical Officer Harmon J. Eyre, M.D., says their top priority is to promote increased funding for cancer research. He calls it a critical fundamental effort in the war on cancer. "We believe that the Cancer Centers are the fundamental place in the country where research is conducted," he adds.

And he sees only good things coming out of that strong commitment.

"It's beginning to be very clear that there will come a time when cancer will be a disease of the past," Eyre says. "There is a tremendous optimism among those of us who have been around a while."

– by Elizabeth Older

The Jim Ayers Institute for Precancer Detection and Diagnosis was established at Vanderbilt-Ingram in 2005 with a five-year, \$10 million gift from its namesake. One goal of the institute is to identify new markers to detect colorectal cancer at its earliest stages using new proteomics technologies developed at Vanderbilt. DuBois says a breakthrough here – which he predicts may be five years away – could reduce colon cancer mortality by as much as 90 percent.

And the baby boomers themselves may play a more important part in their own health care than did patients in past generations. Armed with the Internet as a research tool, healthier from exercising more and eating better, and determined to stay active well into old age, this generation will expect – perhaps even demand – the best medical care for chronic diseases.

Musician Dave MacKenzie just feels lucky that Vanderbilt's Mathew Ninan, M.D., is considered one of the nation's experts in treating his rare lung condition, called a Pancoast Tumor.

"That was a real blessing," says MacKenzie, especially since that meant his wife and performance partner, singer Adie Grey, did not have to sleep in a hotel room away from home during his hospital stay.

Ninan and Kyle D. Weaver, M.D., removed the tumor that had impinged on MacKenzie's nerves, making playing guitar with his left hand more and more difficult. He has gone from being told he might lose the use of his arm, to accompanying his wife on a Louisville radio show publicly for the first time in September.

While his wife used the Internet to track down information after his cancer diagnosis, MacKenzie took a more introspective route to dealing with the disease doctors said could be fatal.

"I was trying to do a more Zen approach to the fear," he says.

At 57, he's not convinced his fellow baby boomers are more fit or more informed about health, but he does think this post-World-War II generation was raised with the expectation of having better lives than their parents did – an expectation that might very well end up in the doctor's office.

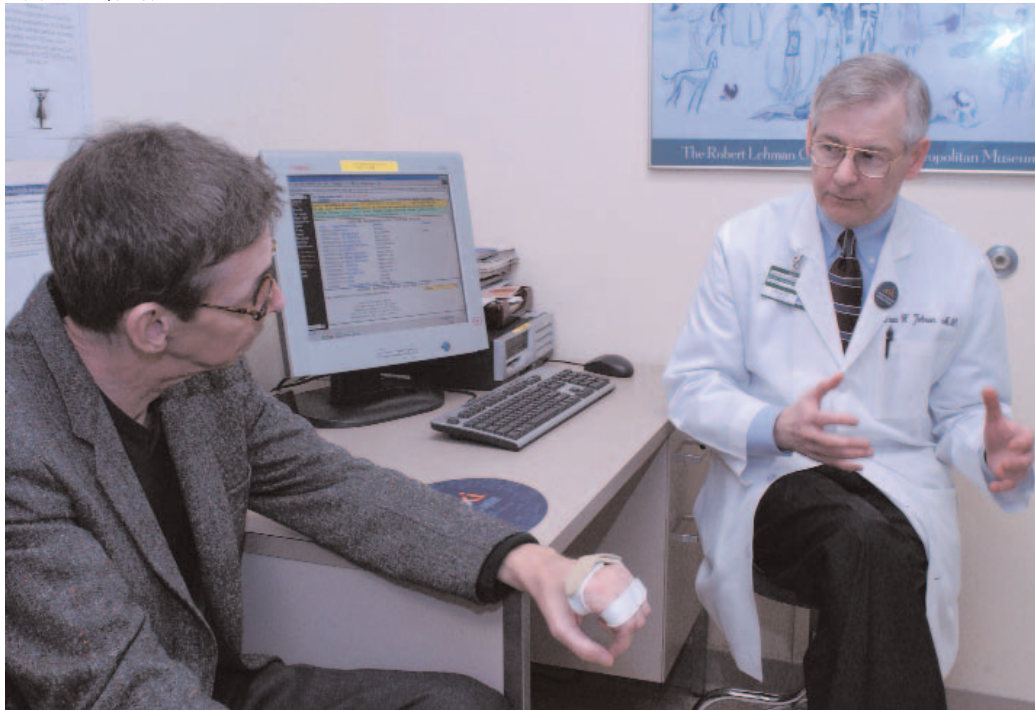
"We were, frankly, spoiled," he says.

MacKenzie observes this might be the first generation to get hit hard by the unknown effects of chemicals and other pollutants in food and the environment. And he thinks worry about bioterrorism – an area that has received increased federal funding – may be misplaced.

"You've probably got a lot better chance of dying from one of these diseases," he observes.

And in the cancer fight, federal funding is imperative, he says.

PHOTO BY DANA JOHNSON



"The war on cancer is like the war on terrorism," says MacKenzie. "It's larger than any individual cancer doctor. It's larger than even a great institution like Vanderbilt....The national approach is the only logical answer."

"The war on cancer is like the war on terrorism," says MacKenzie. "It's larger than any individual cancer doctor. It's larger than even a great institution like Vanderbilt....The national approach is the only logical answer."

For their part, cancer experts have mixed views about what to expect from this incoming wave of patients and the care they will need.

"I do think the boomers are a little more informed – not a whole lot more informed – about their options," says Johnson, who also was a member of MacKenzie's treatment team.

Eyre, of the ACS, believes new developments in information systems will translate to better health care for the baby boomers. Electronic medical records are one example, he observes. This generation will be the first to fully benefit from this technology, Eyre says, which should provide better information for the doctors who will provide the care.

"It's a different population than what was in the past," observes DuBois, "and that could be a good thing." ●

PICTURED ABOVE: Cancer survivor and baby boomer Dave MacKenzie gets advice from his oncologist, David Johnson, M.D.





SPOTLIGHT: RARE CANCER

BOBBY HAMILTON

Head and Neck Cancer

OUT OF THE DRIVER'S SEAT

An inside look at NASCAR racer Bobby Hamilton's cancer journey

By Heather Hall | Photography by Neil Brake

As a NASCAR Craftsman Truck Series champion, Bobby Hamilton Sr. is used to life zooming by at speeds topping 200 miles per hour. But cancer slowed his pace this year, and forced him to put the brakes on his lifelong passion of racing, to fight a disease that brings everyone to an even playing field in an instant.

It started with what Hamilton thought was a wisdom tooth problem. He had it pulled, but his throat was still swollen. Before coming to Vanderbilt, Hamilton had surgery to drain what appeared to be a swollen lymph node. He awoke from surgery to news of a dramatically different kind. "I knew because I saw the expression on the doctor's face. Something told me that it was cancer," said Hamilton. He had a two centimeter tumor on the right side of his neck and a few smaller tumors removed, but a primary tumor site was never found.

Hamilton said he was never a smoker and didn't chew tobacco. "I had no idea. When you think of cancer, you think smoking, alcohol, chewing. I took a puff off a cigarette when I was 8, and I don't drink alcohol very often," he said. Hamilton's father also faced throat cancer, but he said his own diagnosis was still a shock. "Everyone thinks it can't happen to them. To have neck cancer, there are such a high percentage of men that get it for no reason. I think I probably had it for years," he said.

The number 18 driver, typically at home behind his Fastenal Dodge Ram racing vehicle, was forced to hang up his helmet and step out of the driver's seat after racing his last run at Atlanta Motor Speedway in early March 2006. His son, Bobby Jr., would race in his father's place for the remainder of the season. "You never want to think about a fill-in driver for yourself, especially when you are so passionate about your racing career," said Hamilton Sr. "But to have my son in a position to race for me means the world to me."

Hamilton turned to Vanderbilt-Ingram for his cancer treatment. It involved 11 rounds of chemotherapy and 33 radiation treatments. It required Hamilton to make daily visits to the clinic. He quickly realized he'd need to fight this less like a high-speed race, and more like a long, slow marathon.

**EVERYONE THINKS IT
CAN'T HAPPEN TO THEM.**



PHOTO COURTESY BOBBY HAMILTON RACING



PHOTO BY NEIL BRAKE

PICTURED HERE:

(Left) Hamilton, typically comfortable in his helmet and confined race truck, found it difficult to be in the face mask during radiation. The fear of the unknown subsided over time, and Hamilton grew more at ease on the radiation table.

(Top, right) Radiation oncology experts at Vanderbilt-Ingram map out areas of Hamilton's neck prior to treatment to deliver radiation with pinpoint accuracy.

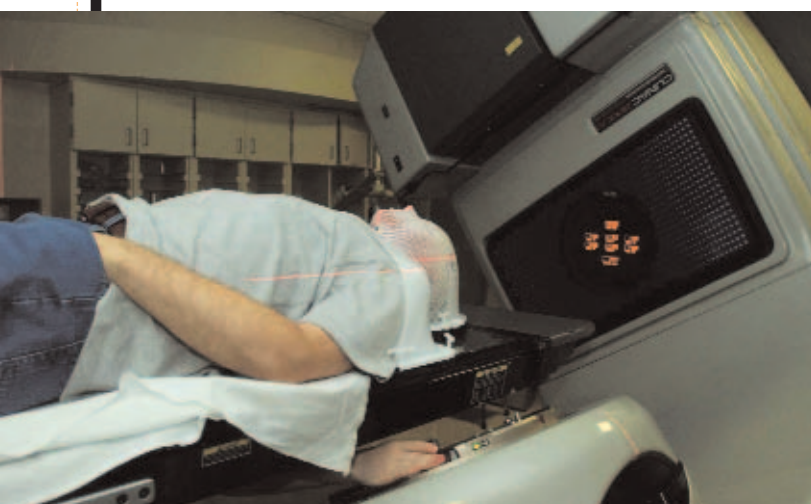


PHOTO BY DANA JOHNSON

"I WILL NEVER BE THE SAME PERSON I WAS BEFORE I FOUND OUT I HAD CANCER. I AM NOW A BETTER PERSON FOR WHAT I HAVE ENDURED, JUST AS ALL THE MILLIONS OF PEOPLE IN OUR COUNTRY WHO FEEL THE SAME WAY AFTER BATTLING CANCER. IT HAS LITERALLY CHANGED MY LIFE."

The intense radiation he needed to treat the cancer in his neck burned him inside and out. "I couldn't swallow my own spit for weeks," said Hamilton. So a feeding tube was placed in his stomach to allow him to avoid swallowing anything until he was healed. Hamilton spent just under a week in the hospital on two occasions, dehydrated and weak. "I couldn't even take pain medication by mouth," he added. "I was scared. I didn't know what to expect. The thought of what cancer does to you, it is phenomenal that people survive. That just shows how strong we are that we do," said Hamilton.

The NASCAR legend soon found comfort in familiar faces on each clinic visit and radiation treatment. Patients who were NASCAR fans and their loved ones recognized Hamilton and would stop by to tip their hats and say hello, offer advice and encouragement. Barbara Murphy, M.D., Hamilton's medical oncologist, said he quickly became a role model for other patients. "Bobby has been an inspiration and support for other patients. He has allowed himself to become a part of the treatment 'family' in the clinic. He is open and approachable and always willing to say 'hi' to anyone who wants a moment of his time. He's very unselfish that way," she said. Anthony Cmelak, M.D., the radiation oncologist caring for Hamilton, agreed. "Bobby's impact has been tremendous. To non-medical people, cancer treatment has historically been a black box. Bobby's candid feelings, hopes and experiences have, I believe, shed more light and ameliorated more people's fears than anyone else I can think of in recent memory."

Doctors and nurses grew to know Hamilton and his fiancée at the time, Lori Shuler, and the couple became experts in a new arena. Taking notes, asking questions, and learning as they went along. "It's very time consuming," said Hamilton. "Taking care of yourself leading up to what the doctors do. Daily, something changes and it's a son of a bitch to keep up with," he said. Shuler said she comes with Hamilton to each appointment to be a second set of eyes and ears. "The main thing I do is just take notes. There is a lot of research on a lot of things you don't understand. You just have to find a routine," she said. Hamilton said the couple never stops learning. "I have

about seven things down on my list of problems. We just try to conquer three a day," he said.

Hamilton is now finished with radiation, but he recently had a second surgery to look for areas of suspicion left behind after treatment. The surgery revealed some cancer still lingering in his body, so Hamilton will undergo another round of chemotherapy. His doctors say he won't be out of the woods for some time. "There is no guarantee for anyone that a treatment will work 100 percent of the time, and he had extensive disease. We will just have to hope and pray for the best," said Murphy.

In the meantime, Hamilton is getting stronger every day. "It doesn't just stop in one night and go away. Wouldn't that be nice?" asked Hamilton. "The truth is, once you have been diagnosed with cancer you always battle it in some form or fashion. Yes, your body heals, and life as you know it goes on, but cancer is always there."

Hamilton is eager to race again, and his doctors hope in time he'll get back behind the wheel. "I hope he can drive," said Murphy. "I know that it means a lot to him." Cmelak said everyone is hoping and pushing for Hamilton to see the checkered flag on a racetrack again, signaling the end of his cancer journey. "Given his incredible determination to date, I think it may be possible for him to race again. At this time, however, I think his big wish is to live, even if he never races again," said Cmelak.

Whatever the road ahead reveals, cancer will never be far from Hamilton's mind, and becoming an advocate for other cancer patients has become a new passion for the future. "I will never be the same person I was before I found out I had cancer. I am

now a better person for what I have endured, just as all the millions of people in our country who feel the same way after battling cancer. It has literally changed my life," explained Hamilton. "I just want to take my battle and use what little bit of celebrity status that I have left and try to promote the awareness for this disease. Cancer changes us all. I have just learned that when you get a second chance, life becomes a different picture the next time around." ●

Update: Bobby Hamilton and his fiancée, Lori Shuler, were married on Sept. 29 in the resort town of Gatlinburg in Shuler's native East Tennessee.

PICTURED HERE: (Left) Hamilton and his wife, Lori Shuler, pour through fan mail wishing the driver a speedy recovery. (Right) Hamilton with his dog, Radio, named after chemo and radiation. Hamilton brought Radio home just before he was diagnosed.



PHOTOS BY NEIL BRAKE

HEAD AND NECK CANCER

Head and neck cancer is made up of a list of tumor sites within the region of the body that includes the oral cavity, pharynx, larynx, hypopharynx, nasopharynx, nasal and sinus area, and thyroid.

If you classify each single site of head and neck cancer alone, each would rank as a very rare cancer, but add them all together and head and neck cancers are the sixth most common cancer in the United States, with close to 80,000 new cases diagnosed each year.

Wendell G. (Dell) Yarbrough, M.D., a surgical oncologist specializing in head and neck cancer and director of the Barry Baker Laboratory for Head and Neck Oncology at

Vanderbilt-Ingram, said head and neck cancer is one of the top three most commonly seen and treated at Vanderbilt, with roughly 450 new patients a year. If it's not caught early, head and neck cancer can be very aggressive, "much more aggressive than breast or prostate cancer. Roughly 50 percent of patients with advanced stage disease will die within three years of diagnosis," said Yarbrough.

Preventing the disease or catching early warning signs early can save lives. "Stage I disease is very amenable to single modality therapy with cure rates approaching 90 percent," said Yarbrough. Annual screening for

head and neck cancer is recommended for patients who use tobacco products.

WARNING SIGNS TO WATCH FOR:

- Sore throat lasting more than two weeks without explanation
- Hoarseness or change in voice quality
- Unexplained loose teeth
- Sores or ulcers in the mouth, tongue or throat
- Spitting up blood
- A mass or lump in the mouth or neck

For more information about the Vanderbilt-Ingram Head and Neck Cancer Program, log on to: www.vicc.org, and click on cancer types. Or call our Information Program at: (800) 811-8480.



PICTURED HERE: Cancer survivor Debbie Hughes and her daughter, Stephanie, walk hand in hand to find their way through life after a cancer diagnosis.





living

with cancer

A ROADMAP FOR THE FUTURE

By Heather Hall | Photography by Anne Rayner



Debbie Hughes is one of many Vanderbilt-Ingram patients living with cancer. She's only 53, but for the rest of her life she will never be able to experience the joy of tasting a mouthwatering meal, because she can't swallow or chew real food. And she can never again know the comfort of falling into bed and curling up in the softest sheets to sleep at night, because if she reclines too far she could choke on her own saliva.

Felice Apolinsky, 43, a licensed clinical social worker at Gilda's Club in Nashville, Tenn., survived thyroid cancer, but her first marriage didn't. "Cancer can be so difficult on a relationship. When a crisis occurs, the good stuff can bubble up, but the bad stuff can bubble up, too. I just think there was nowhere for him to dump how life changing it was for him, as well," said Apolinsky.

Dan Fuson, 54, is living on borrowed time, according to his doctors. The advanced prostate cancer that spread to his bones is "taking a nap," as Dan explains it. While it may be napping, it's not very quiet. On a good day, the pain can be managed with medications, but on a bad day it's enough to bring him to his knees. Dan takes a battery of medications each day to keep his body going.

Just before her 13th birthday, Caroline Hale learned she had a cancerous tumor wrapped around her spine. It was B-cell non-Hodgkin's lymphoma. Two years of treatments ended, but the powerful drugs weakened her bones



PHOTOS BY DEAN DIXON



PICTURED HERE: Vanderbilt colleagues come together to discuss survivorship research as part of the new plan to create a survivorship roadmap.

and Caroline had to have double-hip surgery to reinforce both of her hip bones. The now 19-year-old is beginning a new life on her own at college, but her cancer journey is never far from her mind.

Cancer leaves much more than visible scars for patients to learn to live with and the issues are broad, ranging from side effects to insurance and employment difficulties, and much more. Only in recent years have these kinds of issues come to gain attention, perhaps because more patients are now living with cancer, rather than dying from the disease.

Some experts say cancer has become more of a chronic disease. When it comes to treating certain cancers, they can be managed, much like diabetes or high blood pressure. For this reason, experts at Vanderbilt-Ingram and across the country are trying to produce a single document, a roadmap of sorts, for cancer patients to be given once treatment is over. What most patients want to know when their treatments are over is, what now?

Cancer has robbed Hughes of some simple things many people take for granted. She survived throat and tongue cancer, but her cancer journey, like that of most survivors, will never really be over. "I didn't think I'd ever be normal again. You learn you will never be yourself again; you're a new person with a new life."

For five months after surgery Apolinsky was also left in silence. Surgeons had bruised her vocal chords and she couldn't speak, perhaps at the time when she needed to voice her fears and concerns the most. That was just over 10 years ago, but the memories are still fresh, and the journey is not over.

Fuson said he has learned life now involves much more than a cancer diagnosis. "I have prescription cases for meds in the morning and evening," said Fuson. "We are not just cancer patients. We are whole people, and we deal with lots of other things than just the cancer," he added. For example the pain medication Dan takes causes constipation, so he takes a laxative. The hormone treatments he's on cut off the testosterone his body would normally make, so he takes calcium to prevent bone loss. "This causes that and that causes this," said Fuson. It's enough to make a healthy mind dizzy.

And even at her young age, Hale has a new awareness in life. "I'm aware of all of my aches and pains," she said. "I can honestly say that I've never fully let go, because I've spent so much of the past four years in the hospital."

Survivorship Roadmap

There are nearly 10 million cancer survivors in the United States today. Treating the disease across cancer types has seen huge successes, with options now available to target tumors and spare healthy tissue, with personalized treatments to fight cancers on an individual basis. "There will be a day when DNA is examined and people are told what they are at an increased risk for, the treatment recommended based on their genetic profile, and what side effects they can expect

and how to tailor treatment for that,” said Jim Whitlock, M.D., a cancer physician with the Vanderbilt Childhood Cancer Program.

Because some cancers have moved into a manageable stage and require extensive long-term follow up, Whitlock said he tends to shy away from using the word cure. “It’s not a light switch you turn on or off. The magic number is about five years after treatment. People want to know when they can quit worrying, but you really should never quit worrying. It’s always going to be with you, so you have to be attuned to the baggage that comes with that. It’s the price you pay,” explained Whitlock.

But a new roadmap of sorts, a single document for cancer patients to be given once treatment is over, is in the works to help patients face a new life after cancer and deal with the baggage they’re left to carry. Patricia Ganz, M.D., director of Cancer Prevention and Control Research at the Jonsson Cancer Center at the University of California in Los Angeles, is a recognized expert in studying quality of life and late effects issues facing cancer patients. She participated in the landmark report published by the Institute of Medicine and the American Society of Clinical Oncology, “From Cancer Patient to Cancer Survivor, Lost in Transition.”

Ganz said cancer providers don’t have some kind of formalized document or way to deal with people after treatment. “Patients want to know what is going to happen now,” she said. “It’s something they should expect – to be given information on what the next steps are, and it also needs to be communicated to other physicians caring for them,” added Ganz. “Patients and their physicians could benefit from some synthetic or synoptic document that says what you’ve been through, what to expect, and what tests to follow up with. And it needs to be condensed, so not a stack of records.”

David Johnson, M.D., former President of the American Society of Clinical Oncology, and deputy director of Vanderbilt-Ingram, is an expert in treating breast and lung cancer. He’s also a cancer survivor, himself, and an advocate of a treatment summary for survivors. “Until recently, not much attention was paid to survivors,” said Johnson. “We now recognize that survivors need chronic care, too. Much of that care needs to come from his or her primary care provider, but primary care providers have little knowledge of what that entails,” Johnson added.

The idea of creating a centralized document has taken off and many institutions are already working to develop what is being called a “Survivorship Roadmap,” to address the needs of survivors. Anne Washburn, M.P.H., associate director of Vanderbilt-Ingram’s Office of Patient and Community Education, said they are currently working on such a care plan to offer patients. “They’ll be given a plan



PHOTO BY ANNE RAYNER

PICTURED ABOVE: Felice Apolinsky, L.C.S.W., at Gilda’s Club in Nashville, is a cancer survivor who finds comfort from the group she counsels.

Gilda’s Club offers programs to bring in speakers to discuss job discrimination, insurance issues, how to rebuild relationships, retreats for couples to help them reconnect, and much more. And the best part... it’s free.



"I didn't think I'd ever be normal again. You learn you will never be yourself again; you're a new person with a new life."

once they are done with treatment for whoever follows them. Their drugs and treatments they were given will be outlined, areas of potential high risk will be noted, ideas to help patients maintain a healthy lifestyle, long-term side effects issues, how often you should get evaluated, tests and screening," said Washburn, as well as community resources to help survivors cope with these issues.

The Cost of Cancer

Side effects are the first thing many people think of when talking about issues survivors face, but they go beyond physical or emotional challenges post treatment. Insurance remains the biggest challenge universally. "At our clinic, the drugs have to be approved by insurance before we can give it to them," said Ganz. So what happens to patients who are uninsurable or dropped from their plans? And even with insurance, cancer is costly. "If you have a \$100,000 bill and insurance pays 80 percent, you're still left with a big bill," added Ganz.

Dan Fuson estimates his chemotherapy treatment visits ran up about a \$6,000-a-day bill; his ongoing monthly bone strengthening treatment is about \$3,000; ten radiation treatments for palliative bone pain cost him about \$24,000; periodic scans cost him more than a thousand dollars each time; and hormone treatments run Fuson approximately \$50 a month, thanks to his good drug coverage plan. "Thank goodness for my strong program and my wife's secondary family policy," said Fuson.

Debbie Hughes stopped working after surgery and has never been able to go back, due to her feeding tube, voice problems and overall weakness. Her only source of income these days is through Social Security benefits. The plan allows her a set amount each month to live on. "It's hardly doable," Debbie said. "I will never be able to afford to take a vacation, buy a car or save money, because it takes every penny just to live." She is now trying to figure out how she could afford a lawyer, because she filed for disability and has yet to be reimbursed for the time she was going through treatment.

PHOTO BY ANNE RAYNER

Cancer's Impact on Employment

Other survivors are stuck in an unsatisfying job they feel they can't leave. Most patients are paying into an insurance program through their place of employment; if they were to leave, their insurance coverage would end. Getting hired by a new employer after cancer can be tough, too. Ganz said cancer patients need to be educated on how to present themselves in job interviews when potential employers see a gap in time between jobs on a resume and want to know what the candidate has been up to during that time. Whether you chose to share your health information is a personal decision, and not one most experts advise revealing. "As an employer I cannot ask about those things. It's against the law to ask, and a survivor doesn't have to reveal this information," explained Ganz.

Programs at Vanderbilt-Ingram and across the county can help patients and survivors deal with some of these issues that come with life after cancer. Washburn said Vanderbilt-Ingram, Vanderbilt Corporate Relations and Nashville's Gilda's Club have partnered to address cancer in the workplace. "We're working to educate human resource departments of major corporations in Tennessee to help them understand survivors' needs during and after treatment," said Washburn.

Apolinsky said Gilda's Club offers programs to bring in speakers to discuss job discrimination, insurance issues, how to rebuild relationships, retreats for couples to help them reconnect, and much more. And the best part... it's free. "All support groups are facilitated by licensed clinicians, but people volunteer their services for our workshops, classes and social events. It's all manned by volunteers, making it free for everyone living with cancer, including family members and friends of people facing a cancer diagnosis."

Looking to the Future

Every cancer survivor's journey is unique, but there are similar roadblocks along the way, and soon there will hopefully be a universal map to help guide the way here at Vanderbilt and at other cancer centers nationwide. Until then, survivors already navigating what can often feel like a maze are gaining strength in numbers and learning from one another.

Dan Fuson is hoping his prostate cancer never decides to wake up from its nap. "I'm doing okay. You can't go up to the doctor and say 'how long do I have to live,' because they don't know. I am just living day to day," he said.

Felice Apolinsky finds comfort and healing in her role at Gilda's, helping other survivors. "What really grabs my heart is that Gilda's Club provides a community full of people we consider the true experts – other people who are living with cancer, or loving people living with cancer. They offer a true and deep level of understanding, wisdom and support," she added.

Caroline Hale has turned her journey into her passion, becoming an advocate for children with cancer. "It is so important for childhood cancer awareness. So many people out there don't know children are affected. It's important for people to know this is a community issue," said Hale.

And Debbie Hughes is sharing her cancer experience with other newly diagnosed patients, volunteering her time two days a week at Vanderbilt-Ingram, meeting and greeting patients in the clinic waiting area. Despite her limitations after cancer, her inspiring spirit is infectious. "You just learn to live with it, make the best of it, accept it, and thank God for every day that you have. Your life is never like it was before, but that's OK," said Hughes. "You learn to adjust and accept it. You cry. You have sad days, but you know the worst is behind you and you've got your life." ●

Patient Resources

If you or a loved one need information about a prescription for care, or if you have general cancer questions, want to know more about clinical trials, or finding a provider that is right for you, call the **VANDERBILT-INGRAM INFORMATION PROGRAM** at: (800) 811-8480 or log on to: www.vicc.org.

THE NATIONAL COALITION FOR CANCER SURVIVORSHIP is a survivor-run organization with a 20-year history of advocating for quality cancer care and empowering cancer survivors. Resources can be found online at: www.cansearch.org/, or by calling: (877) NCCS-YES, or (877) 622-7937.

GILDA'S CLUB is a worldwide organization with a focus on living with cancer, where anyone, at any age, with any kind of cancer, along with their family members and friends can find a community of support and programs for emotional and social needs free-of-charge. You can find a Gilda's Club near you by logging on to: www.gildasclub.org, or by calling: (888) GILDA-4-U. To find out more about Gilda's Club in Nashville visit: www.gildasclubnashville.org, or call: (615) 329-1124.

Patients at **VANDERBILT-INGRAM** can get help navigating the cancer journey before and after treatment in the Patient and Family Resource Center on the first floor of the clinic area in room 1955 TVC, or by contacting program coordinator, Kim Drake, at: (615) 322-9799.

THE AMERICAN SOCIETY OF CLINICAL ONCOLOGY has a Web site for cancer patients and survivors. Log on to: www.plwc.org for resources.





ACADEMIC CENTERS AND INDUSTRY
DEVELOP CREATIVE WAYS TO PARTNER

making the marriage work

The increasingly important marriage between the pharmaceutical industry and academic biomedical research can be a challenging one. ✱ Just as a real marriage brings together two sets of families and friends, habits and traditions, values and expectations, a marriage between industry and academia brings together different and sometimes conflicting missions, cultures and ways of doing business.

By Cynthia Manley | Illustration by Curtis Parker

Instead of negotiating whose family will be visited at which holiday or how to discipline the children, the tricky issues revolve around rights to intellectual property, academic freedom and publishing results, the ability to work with other companies or other universities, and so on.

“We need each other,” said Mace Rothenberg, M.D., director of Vanderbilt-Ingram Cancer Center’s Phase I Drug Development Program. Rothenberg is a veteran of numerous successful interactions with industry partners, including the clinical trials that led to approval of oxaliplatin for colon cancer and gemcitabine for pancreas cancer.

“Industry doesn’t have a way to test its products without us, and few if any universities are developing their own compounds. Working through these issues is not direct or simple. It’s complicated. But we’re always searching for a fair, equitable middle ground that protects both sides.”

The legal and financial details – and the necessary negotiations by attorneys and financial experts on both sides – can delay the start of research projects and frustrate academic and industry-based scientists who want to explore innovative ideas together and make a difference for patients.

“If you have a potential breakthrough that may help cancer patients, you don’t want to spend a year talking about whether and how you can work together, – you want to get right to the science,” said Jeffrey Hanke, Ph.D., vice president for cancer research at Astra Zeneca, which has recently enhanced its partnership with Vanderbilt-Ingram.

To streamline and simplify their marriage, the company and the cancer center have developed their own version of a prenuptial agreement, called a Master Alliance Research Agreement, to help navigate many of these issues on the front end. “We’ve developed a strong framework that will help us move forward more quickly,” said Carlos Arteaga, M.D., Vice Chancellor’s Chair in Breast Cancer Research and director of Vanderbilt-Ingram’s Specialized Program of Research Excellence in Breast Cancer.

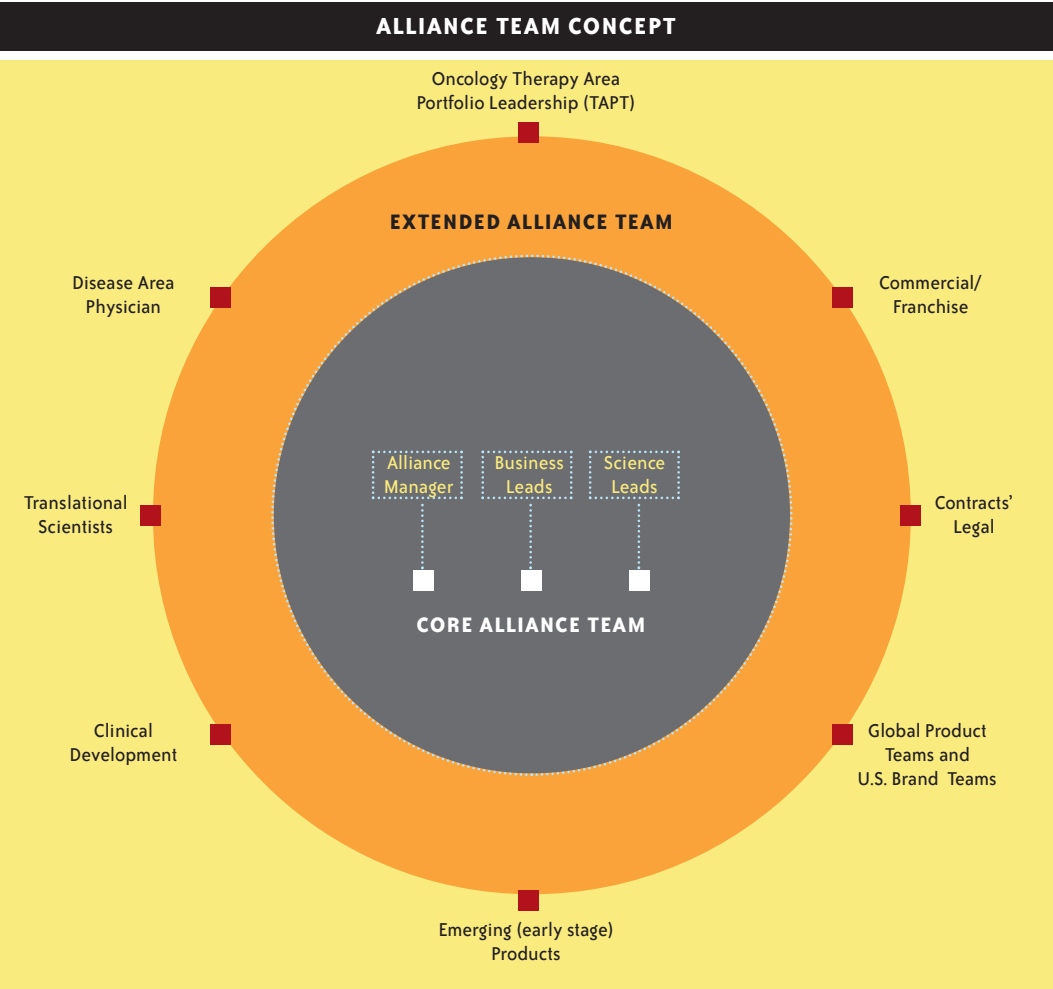
It is one of a handful of such agreements that AstraZeneca has developed, including a similar one with M.D. Anderson Cancer Center that was announced earlier this year and a long-standing one with Baylor University that has narrowed its focus to cancer research in recent years, said Steve Strand. Strand is global director of external scientific relationships for the pharmaceutical company, which has

corporate headquarters in London and research & development headquarters in Sweden.

“AstraZeneca is conducting intensive preclinical discovery and performs clinical trials in a variety of locations,” Strand said, “but there are a select few centers where we feel we really have to get it right.

“Internally, our desire to develop these alliances is driven by our own strategic review. We have a variety of strategies and capabilities that we are building internally, but there is expertise or technology that is important to our work and that we can access much faster through collaboration. For instance, with Vanderbilt, we’re focusing on areas like genomics, proteomics and the development of biomarkers. We need to collaborate in these areas, and we need to work effectively and efficiently together over a long period of time.”

Details of these agreements are confidential. They provide a basic framework that covers the basic financial, legal and similar contractual issues that would be common to any mutual research project. Separate, specific research plans are then developed that can move forward more



quickly under the umbrella of the Master Agreement.

“We (the pharmaceutical industry) do a lot of transactional R&D work with academia,” Strand said. “A single transaction, that’s the traditional model, to come in and do ‘Project A’ with ‘Drug X,’ and when it’s done, it’s done. There’s no institutional memory on either side. Every time we want to pursue a new project with an investigator at that university, we have to re-invent the wheel. Now, we don’t have to renegotiate everything. We’ve got those tough issues hammered out in the Master Agreement.”

The initial Master Agreement between the company and Vanderbilt-Ingram involves preclinical research (basic and “translational” research not involving human patients); however, a similar pact to guide interactions in clinical research has recently been completed.

“WE’RE STUDYING CANCER BIOLOGY, NOT DRUGS”

The “AZ Alliance,” as it’s become known in the hallways of Vanderbilt-Ingram’s Preston Research Building, is similar to a marriage in another way – it was built upon a relationship between individuals at the cancer center and the company. Only later did that relationship grow to include the “families” on both sides.

In this case, it initially developed out of the relationship that the company had with Arteaga, who is known internationally for his research involving the epidermal growth factor receptor (EGFr) and its “cousin” receptors. He had done considerable work with AstraZeneca’s drug gefitinib, which targets EGFr. “Steve Strand approached me about AstraZeneca’s desire to partner with individual centers of excellence,” Arteaga said. “They wanted to identify projects of mutual interest at a thematic level – in our case, research into novel combinations of new cancer therapies and identification of

PHOTO BY DEAN DIXON



“The real measure of our success will be whether we’re able to shorten the time to approval of new drugs and new combinations.”

– CARLOS ARTEAGA, M.D., VICE CHANCELLOR’S CHAIR IN BREAST CANCER RESEARCH
AND DIRECTOR OF VANDERBILT-INGRAM’S SPECIALIZED PROGRAM
OF RESEARCH EXCELLENCE IN BREAST CANCER



All involved in these relationships note that while there must be direct benefits to both the academic and industry partners for the alliance to be successful, the ultimate beneficiary will be patients and families who may be affected by cancer tomorrow and beyond.

PHOTO BY NEIL BRAKE



Christine Chung, M.D., focuses on identifying biomarkers to help tailor treatment decisions for her patients with head and neck cancers. Her work is among the projects supported by the new Vanderbilt-Ingram/AstraZeneca Alliance.

molecular biomarkers to assess and predict response to treatment with these novel agents and/or combinations.”

The teams met in late 2003 and in early 2004, Arteaga recalled. The final agreement was completed and signed in late 2005. Not unlike a future groom introducing his family to his bride-to-be, Arteaga acknowledged some nervousness once Vanderbilt’s legal and financial teams got involved and the process moved beyond his own personal relationship and reputation with the company. “These alliances grow out of the individual relationships at the investigator level,” he said. “I and others in the oncology division at Vanderbilt didn’t meet AstraZeneca yesterday.”

Once the scientist-to-scientist relationship blossomed into a full-fledged alliance, however, it involved multiple investigators in oncology, cancer biology, biochemistry, mass spectrometry and other areas. “You can see the value added for the company,” Arteaga said.

Now that the Master Agreement has been finalized, Arteaga is optimistic that specific projects can move forward quickly. Two projects involving small molecules that modulate cell signaling and cell cycle checkpoints are under way and others are in review.

The preclinical agreement gives Vanderbilt-Ingram investigators quick access to AstraZeneca’s novel compounds – months, if not years, before they would be available otherwise. These compounds

target specific points in biochemical pathways that were already a focus for Vanderbilt-Ingram. These research tools can be used to test hypotheses, learn more about the role of a particular molecule in cancer development and progression, and develop novel biomarkers that can assist the drug development process. This information may in turn fuel AstraZeneca’s own discovery efforts.

“We’re not studying drugs, we’re using them as tools to study cancer biology, and in the process, inform and implement the clinical development of these drugs,” Arteaga said.

The alliance involves team members who serve as “science leads” and “business leads” from the company and the cancer center. A major benefit of the alliance team is continual communication and regular face-to-face interaction among this core team and their colleagues.

These interactions are sparking new ideas and spin-off collaborations – a researcher not involved in the initial agreement is already planning a project with AstraZeneca. Jennifer Pietenpol, Ph.D., Vanderbilt-Ingram’s associate director for basic science programs, noted that this scientist had not worked with an industry partner before. What he’s learned during this interaction will be invaluable to developing future collaborations with this and other industry partners in the future, she said.

The agreement also provides for pilot projects to test very pioneering concepts, as well as important funding for career development for research fellows and junior faculty in addition to funding specific research initiatives.

The financial support, especially for high-risk projects that are not attractive to the typically risk-averse National Institutes of Health, was a major benefit. “It clearly is important for us to diversify our sources of research funding, through private support, corporate sponsorship and technology transfer,” said Kenneth Holroyd, M.D., assistant vice chancellor for Research at Vanderbilt Medical Center. “We want to develop closer ties with forward-thinking companies that are open to the kind of cutting-edge, high-risk science that occurs in academic medical centers.”

OTHER MODELS OF PARTNERSHIP

The Vanderbilt-Ingram/AstraZeneca Master Agreement for preclinical research is only one type of partnership between academia and industry. There have been scores of ambitious



industry-academic alliances over the past 20 years, not only in biomedical research but also in engineering, agriculture and other disciplines, according to the Government-Industry-Industry Research Roundtable (an initiative of the National Academies, which include the National Academy of Science and Institute of Medicine).

Some, including the Vanderbilt-Ingram/AstraZeneca clinical master agreement, provide a framework for patient treatment studies of the company's new drugs. "We're hopeful to make progress on all the little details that can get in the way," Strand said. "It will be to everyone's advantage – ours, Vanderbilt's and patients' – if we can streamline the process."

Still other alliances focus on drug discovery and development, including a recently announced partnership between Vanderbilt's Institute of Chemical Biology (VICB) and Amgen. That agreement, which focuses on neuroscience, provides funding for high-throughput screening of a vast number of compounds to test their ability to activate targets of interest. If promising leads are found, the company could decide to develop them, and Vanderbilt could continue to be involved with the research.

Lawrence Marnett, Ph.D., is director of the VICB and a senior Vanderbilt-Ingram Cancer Center member, leading its A.B. Hancock Jr. Memorial Laboratory for Cancer Research. Marnett's hope is that similar industry relationships can be forged to identify exciting lead compounds for development as anti-cancer drugs.

"This kind of partnership allows you to extend what you do in the lab," Marnett said. "Not only do you get a chance to hit a home run, taking a basic discovery through to its translation into a clinical advance, you get to test your ideas."

All involved in these relationships note that while there must be direct benefits to both the academic and industry partners for the alliance to be successful, the ultimate beneficiary will be patients and families who may be affected by cancer tomorrow and beyond. Driving the Vanderbilt-Ingram/AstraZeneca Alliance, for example, is the mutual desire to design and conduct smarter clinical trials, based on close integration between preclinical and clinical research, in which treatments are tested in the right subset of patients and better therapies become available faster.

"The real measure of our success will be whether we're able to shorten the time to approval of new drugs and new combinations," Arteaga said. "The idea is to deliver these treatments to appropriately selected patients while sparing those patients in whom they are unlikely to work, avoiding wasted time and unnecessary side effects.

"In the end, the patients win." ●

Testing the Limits of Intimacy

Successful industry-academic alliances require give and take on both sides, the Government-Industry-Industry Research Roundtable reported after a "Roundtable Council" meeting in 2000 to explore issues in large-scale, long-term collaborations between industry and universities.

It requires companies to demonstrate faith in the unguided process of academic research, the Roundtable noted in a subsequent report entitled "Industry-University Research Partnerships: What Are the Limits of Intimacy?" And while some worry that universities are compromising their role of objective scholarship by getting too cozy with industry, still others believe that risk can be managed.

"I know the common misperception is that Big Pharma is big, bad and evil, but I believe that our goals are not that dissimilar and that we actually need each other to accomplish them," said Alan Sandler, M.D., director of Vanderbilt-Ingram's thoracic oncology program.

Sandler's successful interactions with industry include clinical research in partnership with Genentech involving its angiogenesis inhibitor bevacizumab. Results of studies done in collaboration with M.D. Anderson's Roy Herbst, M.D., Ph.D., showing its benefit in combination with erlotinib in advanced lung cancer, were reported in the *Journal of Clinical Oncology*.

This work and a Sandler-led Eastern Cooperative Group study combining bevacizumab with chemotherapy helped lead to approval of the drug this fall for patients with advanced non-small cell lung cancer.

"The biggest change over the past 20 years is that the most important new drugs are no longer coming out of the government; they are coming out of pharmaceutical companies. Our mission is not to be one of 200 hospitals working on a clinical trial but to be a Comprehensive Cancer Center that develops cutting-edge, innovative clinical trials that can really move treatment forward in a big way. We can do that with industry, and our work with Genentech and M.D. Anderson is a classic example of how that can work."

Carlos Arteaga, M.D., science co-lead with Jennifer Pietenpol, Ph.D., on Vanderbilt-Ingram's new alliance with AstraZeneca, listed the key ingredients to a successful industry-academic alliance as "trust, speed and financial/scientific support."

"There has to be a willingness on both sides to go halfway; we've got to work quickly and the company has to provide real support for things to get done," he said. "And there has to be mutual need for a true partnership. The problems arise when it's unequal. I am convinced that our alliance with AstraZeneca will be successful because we (the company and the cancer center) are on equal footing. They need us as much as we need them."



Women in cancer

Shattering the Glass Ceiling



Not so long ago, seeing a female physician, let alone a female surgeon or specialist in a field like cancer, was a rare sight. Today, more women than men are enrolled in medical schools across the country in a variety of specialties, but have we come far enough to shatter the glass ceiling?

By Heather Hall | Illustration by Penelope Dullaghan





PHOTO BY DEAN DIXON



PHOTO BY NEIL BRAKE

PICTURED: (top) Barbara Murphy, M.D., director of the Pain and Symptom Management Program at Vanderbilt-Ingram and a head and neck cancer specialist, checks on a patient in the Cancer Clinic.

"I think the next generation needs to see more women on the podium, leading the charge."

— LYNN MATRISIAN, PH.D., CHAIR OF CANCER BIOLOGY
AT VANDERBILT-INGRAM

Lori Minasian, M.D., who heads the Community Clinical Oncology Program at the National Cancer Institute (NCI), says not far enough. "I think there are certain glass ceilings remaining. There are not many women directors of cancer centers, deans of medical schools or running large companies," said Minasian. "And that's unfortunate, because many women are capable of doing that."

Ingrid Meszoely, M.D., director of the Vanderbilt Breast Center at Vanderbilt-Ingram, agrees to some extent. "There have always been a lot of women in medical oncology, but there are not a lot of women in surgical oncology or surgery altogether," she said.

Barbara Murphy, M.D., director of the Pain and Symptom Management Program at Vanderbilt-Ingram and a head and neck cancer specialist, said she wouldn't call it a glass ceiling. "It's more like a porous surface. People can get through, it just takes more effort," Murphy said.

Sandra Horning, M.D., past president of the American Society of Clinical Oncology (ASCO) and professor of Medicine in the Divisions of Medical Oncology and Blood and Marrow Transplantation at Stanford University, said there were no female role models when she went through her residency training. "We were a

scarce breed in those days," she said. "It was very notable, because you did stand out in everything that you did. A team would almost always consist of you and all men. You felt you were not just representing yourself, but all women."

In her role at ASCO, Horning was still carving a new path for women, to some degree. She was only the fourth female president of the organization. "It's not too many. You do feel some of that pressure and responsibility."

Lynn Matrisian, Ph.D., chair of Cancer Biology at Vanderbilt-Ingram and former president of the American Association for Cancer Research, said she has felt the same kind of pressure serving on a national level. "I guess I often feel that I have to speak louder to be heard, but I haven't really felt like I've bumped into a glass ceiling," she said.

Even today, female physicians say certain fields are more open and accepting to women. In the past, the options were even fewer. "When I was in medical school there were many specialties where women didn't exist. You were basically told what fields you shouldn't apply for," said Murphy. "Even now, you can walk into rooms where you, as a female physician, are one of the few women in the room," she added.

Gender Bending

Meszoely said she's dealt with gender bias, both in a positive and negative way. When she was searching for a job, everyone wanted a female breast surgeon, to her benefit. "But after struggling through residency to be equal to the guys, it was ironic to choose a specialty where female surgeons are often pigeonholed," she said. "Surgeons are kind of a macho group of people, and to depart from that image by choosing a career that is considered less technically demanding, was difficult because of that mind-set. Many of my peers would consider my specialty choice as compromising."

Horning agreed. "In my opinion, it is true that women still face important issues with regard to biases and the way in which that can influence your ability to lead until you have proven yourself," said Horning.

Murphy said the gender bias issues still slip into the workplace. "Men and women communicate differently. As a woman, you can be

seen as weak if you don't make your requests or expectations clear. On the other hand, if you are forceful, you may be characterized as being 'bitchy'. What is seen as strength in a man is often seen as 'bitchiness' in women. It's a catch 22," she said.

Anything You Can Do, I Can Do Better

Traditionally, women are known to be more nurturing, but what, if anything, do female physicians bring to the cancer field or a leading cancer organization that men don't? Some women say it is a commitment to working as a team and continuing to build the team. "Women can help create a more inclusive and nurturing environment for the organization, to think more about the team and feel far less pressured to be 'the executive,'" said Horning. "Women tend to try to be respectful of each member of the team and recognize and award each person. This is not exclusive to a woman, certainly a man can do this, but I think it may come a little more naturally to a woman to do that."

Matrisian said she sees women as more naturally inclusive than competitive, particularly in science. "I do see a role for women, as science changes from a very hierarchical society with one big boss with everyone working for them to more of a team approach to science, a multidisciplinary approach, in cancer anyway. As we move in that direction, I think more and more women will be proven to be good leaders and we will continue to shine as science goes forward," said Matrisian.

Minasian said the nurturing nature of female physicians has also helped to move the care of cancer patients in a new direction. "Women, at the risk of sounding stereotypical, have a sense of the overall person in the patient, and think more of the sequelae of therapy and the person's overall life," she said. "We're starting to talk more in cancer about long-term side effects. I do think women tend to listen more, but at the same time, I've seen many men who do and women who don't," added Minasian.

Matrisian said she agrees. "It is the classic nurturing kind of thing that women are brought up to be more attuned to. Sometimes we think of things from that perspective that men are not as likely to. Not all, but some," she said.

Mom and M.D.

When it comes to dealing with pregnant physicians in the clinical environment, most female physicians say times have changed dramatically, for the better. "I remember when I was pregnant in 1995 I decided to take three months maternity leave. Because I was going to 'upset the ward' schedule I had to work two months back to back when I was six to seven months pregnant," said Minasian.

Murphy said some men are now asking for medical leave during the birth of a child. "I think it's a good thing. Thirteen to 14 years ago this was a major issue, now it is pretty much a scheduling issue," she said.

But women are still facing issues managing the roles of mother and physician, and some wonder whether that has been the barrier to seeing more women in leadership positions in medicine and national cancer organizations.

The Next Generation

"I think the next generation needs to see more women on the podium, leading the charge," said Matrisian.

Murphy agreed, but understands it won't happen overnight. "I think women have swelled significantly in the lower ranks. Occasionally you'll see women in higher ranks, but I don't see a huge swell of women in higher ranks. I think it's going to take longer."

Meszoely said up-and-coming female physicians need to know how to manage the expectations. "You are still expected to carry out the traditional roles of a woman as well as your role as a physician. If your goal is reaching some leadership position, it requires a lot of devotion to your job. You may sacrifice time with your family. It's a challenge in relationships."

Horning said women in cancer care and leadership roles today have an obligation to mentor younger women following in their footsteps. "It is very important for older women to put a hand out across the bar to help younger women come aboard and share in the opportunities and successes," said Horning. "I truly believe, in this current era, women can do pretty much anything they set their sights on. Making decisions about career and balance in life are very individual and there is no right or wrong way to combine a career in medicine and a family or balanced life."

Matrisian said her advice to a young, female physician or researcher would be to break through the glass ceiling if they do encounter one along the way. "If you can't go left, go right, because there are always going to be obstacles. If that's where you want to go, just find a way to get there." ●

PICTURED: Cheryl Herman, M.D., (left) co-director of Breast Imaging at Vanderbilt-Ingram, examines images with Ingrid Meszoely, M.D., clinical director of the Vanderbilt Breast Center.



PHOTO BY NEIL BRAKE



STORIES OF SURVIVAL

JARRETT STEIN

In His Own Words



W

hen I was diagnosed with cancer, I was literally taken out of the world I knew and suddenly surrounded by sights and sounds and smells that I had never experienced. Like so many other childhood cancer patients, my diagnosis was a total shock.

I was a freshman in high school and playing on the tennis team. So, during spring break in Florida, my Mom and I practiced every day. After a few days, my Mom sensed that something was wrong. I knew I had been tired and not very hungry and that I had a slight cough, but that didn't seem reason enough to go to my pediatrician on the last day of spring break. But Mom insisted, and we went on Friday afternoon. Among other things, my doctor noticed that I had developed a heart murmur, so an appointment was made for an echocardiogram at Vanderbilt on Monday. I went to school that Monday, carrying my tennis racket, expecting to go to practice after the echo. However, the results of the echo changed everything.

During the echo, the first nurse couldn't find what she was looking for, so she called a second nurse who also moved the wand around the left side of my chest. When they asked the doctor to come in, he checked my back and the right side of my chest before saying, "Ah... there it is." I thought he had found the murmur and I relaxed, but what I found out later was that they were having trouble finding my heart because there was a mass that was so large it had moved my heart to the right side of my chest. From there I endured countless tests and procedures over the next two days, the longest of my life, until the final diagnosis came on Wednesday night – an advanced stage of non-Hodgkin's B-cell lymphoma.



By Jarrett Stein | Photography by Daniel Dubois

Monday morning I was a regular kid on my way to school and by Thursday morning I was having my first round of chemo. A few days before, I was a healthy kid with a cough. Now I had cancer. I went from playing football with my friends at lunch to statistically facing death, in three days. I've heard it happens like this for lots of kids. They may have a pain in their leg or just feel really tired and suddenly tests show that they have cancer.

That first Wednesday night, when I learned I had cancer and what my treatment would be, the only way I knew how to react to this overwhelming news was to decide that there was absolutely no way I was going to lose this battle. So, I did everything my doctors and nurses told me to do: I cleaned my catheter every day, I tried to relax when my newly trained Mom gave me shots every day, and I tried to eat, although not every day and not until a feeding tube was described as the next option. I wasn't brave (after all, up until then I hated having my finger pricked during my annual exams) but I also wasn't scared. I wasn't scared because everywhere I went I had people at the hospital watching over me.

My treatment roadmap consisted of six rounds of high dose chemo, so for each round, I was in the hospital for six to 10 days and then at home in between for about three weeks, to let my counts recover. At that time my family was focused on getting through each day. We knew that the drugs were toxic, but we also knew that it was my only option. There were many areas of my life where I no longer had options. For example, I couldn't go to school and I couldn't see my friends. But, and this is a very important "but," my doctors and nurses always tried to give me choices, even if it was only the choice to take my medicine in liquid or pill form, or which arm to get a shot, or whether to be asleep or awake during a spinal. By letting me know I still had choices, I realized that I could also choose my attitude. So, when I was wheeled into surgery, I chose to have a smile on my face. I wanted to be the kid in the hospital that doctors looked forward to seeing in the morning. I wanted to be the kid that the nurses enjoyed spending time with when they changed my IV. I just wanted to make the best of the experience that had been dealt to me.

And I knew that in certain ways I was very lucky. I felt reassured because I knew I was at a place near home, where people cared about me even though they just met me, a place where I was included in



PICTURED HERE: (top) Jarrett and his dad, Roland, at his brother's graduation. (bottom, left) Jarrett, with his dad at home, preparing to cook a meal. (bottom, right) Jarrett and his brother, BJ, share a hug at BJ's graduation from high school.

decisions being made even though I was only 14, a place where I had complete belief in my doctors and nurses because I knew that they had my best interests at heart. This makes me eternally grateful to each person who helped me.

But even surrounded by everyone at the hospital, I somehow felt alone in my battle. There was never a point in my five months in the hospital that I wasn't in contact with another person, yet I was fighting in solitude. This is because the enemy was myself; I had to fight something that was intrinsically a part of me, and no one else could help me fight me. This added to the challenge but also weighed me down. At times the pain became too much, and if I was only going through this ordeal just for myself, I thought quitting might be a better option than experiencing the pain. It was then that I realized that I might be fighting alone, but I was definitely not fighting for only myself. I was fighting for the kids in the hospital rooms next to me, I was fighting for the doctors and nurses and everyone who was part of the cancer center, I was fighting for my friends, for my grandparents, for my brother, and for my parents. That's when I knew that along with survivorship comes responsibility. I was suddenly strongly connected to other people in the cancer community.

After treatment, my first year back to school for tenth grade was a real physical struggle. I was still bald and had to use the elevator.



PHOTO BY DANIEL DUBOIS

PICTURED HERE: Jarrett, (left) and BJ, continue to share a close bond; Jarrett followed in his big brother's footsteps and is attending the University of Pennsylvania.

“After having cancer, I now realize what is **important to me** and what is not and when I am being true to myself and when I am not.”

My teachers and friends could see that I needed tremendous support while I tried my best to be a regular kid. Then I would go home and go directly to bed until the next morning. I was still working hard to get through each day. By eleventh grade, I was looking and acting like my old self, but on the inside I was completely new. My thinking had changed, my dreams had changed, and I just couldn't make sense of why the details of school were important – even though throughout my treatment my main goal was to get well so that I could start school in the fall with my class. Because I was confused and had trouble sleeping, I also had trouble getting up and I began to miss classes, which added to my stress and further reduced my ability to sleep. Schoolwork seemed much harder. I had trouble focusing on what I was reading, made lots of careless errors in math, wasn't able to plan or organize my work and often brought home the wrong books for my assignments.

I didn't want to talk to anyone about it, but my parents asked me to write down my thoughts as a way to move forward. Actually, I don't remember too much about this time period, as I also have short term memory loss as a result of chemo (which I guess in this case is a good thing). I soon learned there was a name for what I was going through, and it was called post traumatic stress disorder. It can be one of the major challenges for childhood cancer survivors. I do remember that I resisted talking to a therapist because this type of treatment was not part of my original roadmap and I didn't want anything “extra.” I've heard that many kids feel this way.

My story is representative of most, although I have been fortunate thus far to suffer fewer late effects than many other children. I now know that as I age, the drugs I took may affect my heart, my liver, and many other organs. Even though my treatment ended four years ago, I still get tired easily, rarely feel hungry, and seem to get a cold every time someone sneezes. I think it would be helpful to offer both a roadmap during treatment as well as a roadmap after treatment so that late effects during survivorship can be minimized. I also

think that survivorship programs give everyone a more positive outlook. Doctors and nurses see that the kids they helped save are continuing to get the best care and current patients see survivors who have their hair and energy back, thus acting as visual signs of hope.

I know that I benefited from the experiences of children who were treated before me, because my protocol was the result of clinical trials that other children enrolled in. As a way to honor those children and help others in the future, I am trying to raise awareness and funds for childhood cancer research, for cures and less toxic treatments, and for survivorship programs. That is why I go to Washington to speak with representatives from Tennessee, that is why I share strategies that worked for me with other teens, and that is why I am sharing my story here.

After having cancer, I now realize what is important to me and what is not and when I am being true to myself and when I am not. Although it may seem that sometimes we are given too many choices and sometimes we are given too few, for me it is the understanding that it is not only the choices I am given, but the ones I create on my own that will mold who I am and who I become. ●

Editor's Note: Jarrett Stein is now 19 and in his sophomore year of college at the University of Pennsylvania in Philadelphia. His 22-year-old brother BJ recently graduated from the same school and offered a support system away from home when follow-up appointments were needed. Jarrett is working on a book about his cancer experience called “Bald or Shaved.” When he's not writing, Jarrett enjoys challenging his big brother in a game of hoops. Jarrett also has a passion for food and creating new dishes that began during treatment, when he was too sick to enjoy certain foods. His latest attempts in the kitchen focus on perfecting the art of sandwich making by adding a modern flair, and the aspiring restaurateur plans to open a sandwich shop at Penn. When he's not away at school Jarrett enjoys time at home with his father, Roland, and his mother, Jennifer Louis, who are actively involved in the cancer community and advocacy at the state and federal level.

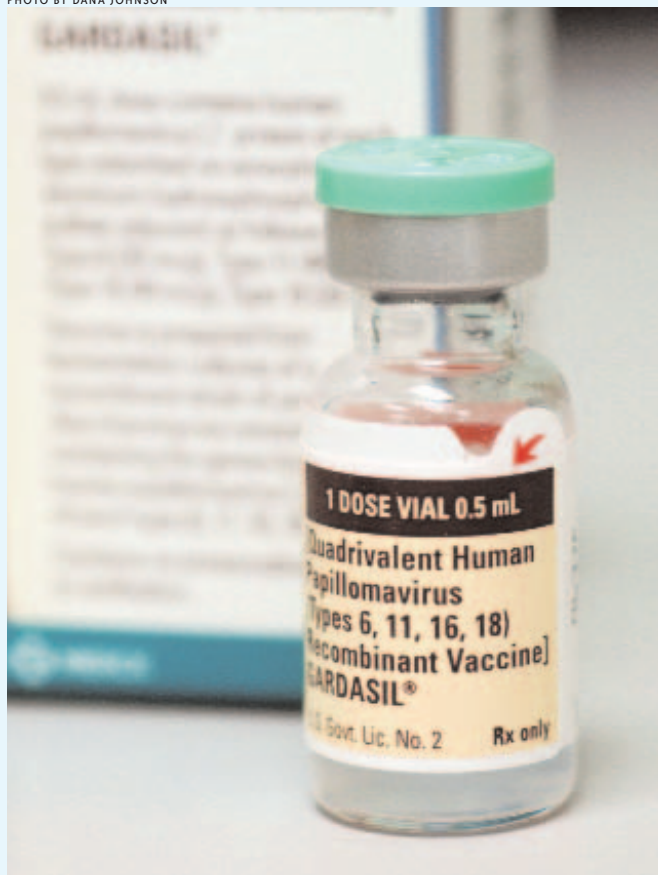
Vaccine to prevent cervical cancer approved

The Food and Drug Administration recently approved a vaccine called Gardasil to protect women against cervical cancer, after a 40-month trial of 4,000 young women at 13 U.S. sites, including Vanderbilt University Medical Center.

The vaccine works by preventing infection from four strains of the human papillomavirus, (HPV), the most common sexually transmitted disease. About 20 million people are believed to be infected with HPV, according to the National Institute of Allergy and Infectious Diseases.

Gardasil protects against Types 16 and 18, the two strains of HPV responsible for about 70 percent of cervical cancer cases. Although many women are infected with HPV, their normal immune defense system fights the virus, and most women never go on to have an abnormal Pap smear or cervical cancer. The vaccine boosts this natural immunity, and in turn, may prevent the viral infection and help women whose immune

PHOTO BY DANA JOHNSON



DID YOU KNOW//CERVICAL CANCER BY THE NUMBERS

▼	▼	▼	▼
9,710	50,000	240,000	3,700
invasive cervical cancers diagnosed in the U.S.	cases of cervical dysplasia each year	women worldwide die from the disease each year	U.S. women die each year

*2006 data from the American Cancer Society

systems don't fight the virus. The vaccine also blocks infection of two other strains of HPV, responsible for 90 percent of genital warts cases.

"Over the past 15 years, there has been increasingly clear evidence that cancer of the cervix is caused by a virus," said Howard Jones III, M.D., director of Gynecologic Oncology at Vanderbilt-Ingram and one of the study's investigators. "We've been able

to identify over time that it's the HPV virus that causes cervical cancer, but we've never been able to prevent it. This vaccine allows us, for the first time, to prevent the infection of HPV in women."

Jones said the next step is to see if the vaccine works in the general population, to make sure there are no side effects, and that it's effective in larger groups of people. "But it is still important that women continue to get their regular Pap smear screening. Even if everyone is being

vaccinated 15 years from now, we still might have 30 percent of the current number of women with cervical cancer because the current vaccine is directed against only the two most common types of HPV which cause 70 percent of cervical cancer. In addition, the progression from HPV infection to cervical cancer is slow, and women may already be infected but not develop an abnormal Pap smear for several years."

The vaccine is costly— about \$360 for the three required doses spread over four months. It has been approved for girls and young women, 9 to 26, who test negative for the virus and do not have cervical dysplasia.

The Vanderbilt portion of the study was led by principal investigator Peter Wright, M.D., professor of Pediatrics, Microbiology and Immunology and Pathology, and director of the Division of Pediatric Infectious Disease. Fifty-one young women between the ages of 16 and 26 were enrolled locally, mostly Vanderbilt undergraduate students who were recruited by John Greene, M.D., director of the Zerkow Student Health Center.

— by Nancy Humphrey

"We've been able to identify over time that it's the HPV virus that causes cervical cancer, but we've never been able to prevent it. This vaccine allows us, for the first time, to prevent the infection of HPV in women."

— HOWARD JONES III, M.D., DIRECTOR OF GYNECOLOGIC ONCOLOGY AT VANDERBILT-INGRAM



Trial adds new weapon in war on breast cancer

Initial results of the five-year Study of Tamoxifen and Raloxifene, or STAR, revealed the osteoporosis drug raloxifene to be as effective as tamoxifen in preventing invasive breast cancer.

Vanderbilt-Ingram was the only regional participant in the study, one of the largest prevention trials ever conducted. Initial results show that the drug raloxifene, currently used to prevent and treat osteoporosis in postmenopausal women, works as well — with fewer side effects — as tamoxifen in reducing breast cancer risk for postmenopausal women at increased risk of the disease.

Investigators said both drugs reduced the risk of developing invasive breast cancer by about 50 percent. In addition, women who were prospectively and randomly assigned to take raloxifene daily, and who were followed for an average of about four years, had 36 percent fewer uterine cancers and 29 percent fewer blood clots than the women who were assigned to take tamoxifen. Researchers said uterine cancers, especially endometrial cancers, are a rare but serious side effect of tamoxifen. Both tamoxifen and raloxifene are known to increase a woman's risk of blood clots.

Mark Kelley, M.D., chief of Surgical Oncology at Vanderbilt-Ingram said the results were as he expected. "Raloxifene was equivalent to tamoxifen in terms of reducing the risk of invasive breast cancer, and had a more favorable side effect profile in several areas, including endometrial cancer risk, deep vein thrombosis and pulmonary embolus, and cataract risk. It appears that both drugs were equivalent in terms of bone fractures, stroke, heart attack risk and quality of life. I believe that this makes raloxifene the drug of choice for risk reduction in postmenopausal women at increased risk of developing breast cancer."

Both raloxifene and tamoxifen are known to protect bone health and it's estimated that 500,000 postmenopausal women are currently taking raloxifene to prevent or treat osteoporosis. Additionally, the initial results from the STAR trial suggest that raloxifene does not increase the risk of developing a cataract, while tamoxifen does.

"Although no drugs are without side effects, tamoxifen and raloxifene are vital options for women who are at increased risk of breast cancer and want to take action," said Leslie Ford, M.D., associate director for clinical research in the National Cancer Institute's Division of Cancer Prevention. "For many women, raloxifene's benefits will outweigh its risks in a way that tamoxifen's benefits do not."

The researchers also tracked known menopausal side effects that occur with both drugs, and monitored the participants' quality of life. They found that side effects of both drugs were mildly to moderately severe, and quality of life was the same for both drugs.

More than 19,000 postmenopausal women at high risk for developing breast cancer were enrolled in the trial. Vanderbilt-Ingram was one of 400 sites in the United States, Puerto Rico and Canada that participated in the study.

Only five sites in Tennessee enrolled patients in the study, and Vanderbilt was the only hospital in the Middle Tennessee region. A total of 52 women were enrolled at Vanderbilt, including a handful at a sub-site at East Tennessee State University in Johnson City. Overall, 271 women were enrolled in Tennessee. Participants were randomly assigned to receive either 60 mg of raloxifene or 20 mg of tamoxifen daily for five years.

Paula Johnston enrolled in the study at Vanderbilt-Ingram. The 57-year-old lost her only sister to breast cancer last year and her mother had two mastectomies 15 years apart for breast cancer. "Every year the odds get a little bit worse. Everybody I know has someone who has had to deal with it. You don't have to look too far to find someone," said Johnston.

She has three daughters, all in their 20s, and her sister left two girls behind when she died. Johnston said she felt participating in the STAR trial was important. "I wanted to be a part of it because of all the girls in the family. We don't know what's just around the corner."

PHOTO BY DANA JOHNSON



Elizabeth Broome, M.S.N., R.N., a research specialist at Vanderbilt-Ingram, discusses the clinical trial with participant Pat Sanders.

Patricia Sanders, 68, of Murfreesboro also participated in the study. Her sister had a lumpectomy for breast cancer and her mother and aunt died from the disease.

"I want to do what I can to prevent it," said Sanders.

The trial was coordinated by the National Surgical Adjuvant Breast and Bowel Project (NSABP), a network of cancer research professionals, and was sponsored by the NCI.

Participants in the STAR trial are now receiving information about which drug they were taking. Women assigned to raloxifene will continue to be provided with the drug until they have completed five years of treatment, while women assigned to tamoxifen can choose to continue taking tamoxifen or to receive raloxifene to complete their five years of treatment.

— by Heather L. Hall

DID YOU KNOW



55-65% of children diagnosed with cancer in the U.S. by or before age 14 receive treatment through enrolling in a clinical trial sponsored by the NCI, while less than 2% of adults diagnosed participate. To find out more about clinical trials, call the Vanderbilt-Ingram Information Program at: (800) 811-8480.

Tennessee history made at Vanderbilt-Ingram as local soldier receives new lease on life

A Fort Campbell, Ky., soldier became the first adult patient at Vanderbilt-Ingram and only the second adult in Tennessee history to receive a stem cell transplant from umbilical cord blood, offering him a fighting chance at beating leukemia.

Charles Dougherty is hoping the transplant will prove to be the cure to beating his diagnosis with leukemia. Madan Jagasia, M.D., and Brian Engelhardt, M.D., specialists in hematology and stem cell transplant at Vanderbilt-Ingram, performed the procedure several months ago, and have been watching Dougherty closely for rejection.

Cord blood transplants have been widely used to treat children with blood-borne cancers but the procedure is still new in adult patients because of the amount of stem cells needed for a larger patient. Jagasia said the techniques needed to safely carry out the cord blood transplant have also improved. "We've gotten better at freezing, transporting and collecting cord blood."

Dougherty, a husband and father of three girls, said he was surprised when he found out he had an advanced blood cancer. But a biopsy of the lymph nodes in his neck tested positive for the disease and he's been on a roller coaster ever since. He's a combat engineer for the U.S. Army stationed at Fort Campbell, Ky., in the Alpha company's first brigade and special troops battalion. "I went back to work for a while, but I got an infection and had to be hospitalized," he said. He spent 45 days in the hospital for initial chemotherapy to treat the disease. The soldier said he's ready to be done with this fight and get back to work. "Used to, when they told you, 'you have cancer,' it was pretty much over. Now they can pretty much cure everything," Dougherty said. "It's pretty nifty. It's very advanced," he added.

Before the transplant could happen, Dougherty had to go through powerful doses of chemotherapy and radiation for a week to rid his body of any cancer that might be hiding elsewhere in his blood, which could ruin the chances of a successful transplant. While Dougherty was being prepared for transplant, the cord blood was

YOU CAN DONATE CORD BLOOD, USUALLY DISCARDED, TO HELP SAVE A LIFE USING ONE OF THREE CERTIFIED BANKS IN THE UNITED STATES. FOR MORE INFORMATION ABOUT DONATING CORD BLOOD, VISIT: WWW.CRYO-INTL.COM/ENROLL.HTML.

flown in from a blood bank in New York. It arrived frozen in liquid nitrogen before being warmed at Dougherty's bedside and placed in a syringe.

The transplant itself is fairly simple — an IV line is placed under the collarbone and the stem cells are pumped in to do their work. "These cells are smart. They home to the bone marrow — how, we don't know. They only go to the bone marrow," Jagasia said.

Dougherty is still being monitored for graft versus host disease (GVHD), or rejection of the recipient's body by the donor's cells, which the doctors said happens 6 percent to 8 percent of the time. "Charles will basically have someone else's immune system," Jagasia explained.

Engelhardt said Dougherty has suffered some minor setbacks since his transplant, and still has a long road ahead, but he's recovering well and all signs look good so far.

"Over the last 100 days, Charles has developed some GVHD of the skin but it has responded well to treatment. His transplanted cord blood is now 'engrafted' and his new bone marrow is growing and producing white cells, red blood cells and platelets.

As far as getting back to work with his fellow soldiers in the Army, that could still be in question. "It would be our hope that we would know in about a year, but it's just too early to tell," added Engelhardt.

— by Heather L. Hall



Top: Patient Charles Dougherty talks with Brian Engelhardt, M.D., before his umbilical cord stem cell transplant, as his family looks on.

Bottom: The frozen umbilical cord stem cells that offered Dougherty a new start.



PHOTOS BY DANA JOHNSON



New Class for Breast Cancer Survivors

Breast cancer survivors may benefit from a new weekly class with yoga-like moves derived from ancient Chinese medicine that is now being offered by the Vanderbilt Breast Center in conjunction with the Vanderbilt Dayani Health and Wellness Center.

Qigong uses flowing, gentle movement and postures, special attention to breathing, and visualization to help participants with relaxation and stress management, improve range of motion, increase strength, sense of balance, flexibility and energy.

The class, called ReNew, is held at Dayani every Thursday at 4 p.m., led by Kathy Woods, M.Ed. Woods is a breast cancer survivor and instructor in mindfulness-based stress reduction. It is open to women following a diagnosis of breast cancer, whether during or after treatment. A medical assessment is required before participation.

Qigong instructor, Kathy Woods, M.Ed., (left) shows breast cancer survivor and class participant, Helen Settles, arm movement techniques at the Dayani Health and Wellness Center.

The class is free for Dayani members and \$10 per class for others. Limited financial assistance is available from Vanderbilt-Ingram based on financial need. To learn more about the class, call (615) 322-4751 or visit www.dayanicenter.org.

— by Heather L. Hall

PHOTO BY DANA JOHNSON



JOURNAL WATCH

1 Madan Jagasia, M.D., **co-authored a paper in the journal *Cancer Research***. The paper, “Dysregulated human myeloid nuclear differentiation antigen expression in myelodysplastic syndromes: evidence for a role in apoptosis,” can be seen in the May 1, 2006, issue of the journal. Myelodysplastic syndromes (MDS) are a type of clonal disorder affecting hematopoiesis that leads to fatal cytopenias or acute myeloid leukemia (AML). To see the full article online go to: <http://cancerres.aacrjournals.org>.

2 Raymond DuBois, M.D., Ph.D., and Sudhansu K. Dey, Ph.D., **co-authored a paper, “Repression of prostaglandin dehydrogenase by epidermal growth factor and snail increases prostaglandin E2 and promotes cancer progression,” in the July 1, 2006, issue of *Cancer Research***. The study was featured on the cover of the issue. It found that prostaglandin dehydrogenase, or PGDH, may serve a tumor suppressor function in colorectal cancer and provide a possible COX-2-independent way to target PGE2 to inhibit cancer progression. To see the full article online go to: <http://cancerres.aacrjournals.org>.

3 Carlos Arteaga, M.D., **co-authored a paper in the journal *Cancer Cell***. The paper, “HER2/neu (ErbB2) kinase domain mutation results in constitutive phosphorylation and activation of HER2 and EGF receptors and resistance to EGFR tyrosine kinase inhibitors,” can be seen in the July 1, 2006, issue. These data suggest that (1) HER2YVMA activates cellular substrates more potently than HER2WT; and (2) cancer cells expressing this mutation remain sensitive to HER2-targeted therapies but insensitive to EGFR TKIs. To see the full article online go to: www.cancerres.aacrjournals.org.

4 Mace Rothenberg, M.D. and **co-authors have a paper in *Clinical Cancer Research***, “Phase I and pharmacokinetic study of intravenous irinotecan in refractory solid tumor patients with hepatic dysfunction.” The paper discusses findings on safe starting doses of Irinotecan given by IV for patients with liver problems. It can be seen in the June 15, 2006, issue of the journal. To see the full text online go to: <http://clincancerres.aacrjournals.org>.

onefinalnote



PHOTOS BY ANNE RAYNER



Jaden Jude shows off his dance moves to the sounds of harpist Betty-Ashton Andrews, while his mom, Melinda, looks on. Andrews is a musician in the Music in the Clinic program at Vanderbilt-Ingram. The Music in the Clinic program brings local musicians of all kinds – guitarists, pianists, singer-songwriters from Music Row, violinists and more – to the clinic to entertain patients and loved ones while they are in treatment, waiting, or passing through.

For more information about the program, call: (615) 343-7776.

Out of the Driver's Seat

NASCAR legend Bobby Hamilton shares his cancer journey.

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momentum

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