



Wellspring

Neurosurgeon Edie Zusman, M.D.

NorthBay is Redefining
Community Medicine

High-tech Tools,
Close to Home



Our Key to Achieving Advanced Medicine

I am humbled and excited to settle into this space in *Wellspring*, providing a CEO's view of NorthBay Healthcare—today and into the future.

I have just completed my first 100 days at the helm of this nonprofit, independent community institution and it feels natural. I have my predecessor, Gary Passama, to thank for that because he and our Board of Directors long ago put together a succession plan to ensure that whoever would be writing this essay was focused on keeping NorthBay Healthcare the leading health care system in Solano County.

We also welcome a new corporate board chairman. Mark Sievers, a 26-year veteran of several NorthBay boards, was sworn in as chairman of the NorthBay Healthcare system board on June 14. He has the depth of knowledge about our organization that will serve us well in his new role.

Mark takes the helm from G. Ben Huber, a 30-year board veteran who will continue as a health care system director.

These are exciting times for us, our physicians, our nurses and support staff, our patients and our community. We have redefined what it means to be a community hospital.

It does not mean small, limited, or unrefined. Peruse the pages of this *Wellspring* and you will see what I mean.

NorthBay Healthcare has never been an organization to follow trends, nor do we shy away from always doing the right thing. When it doesn't seem like we can do it, when the odds are against us, we just do it.

Whether it is earning membership in the Mayo Clinic Care Network or becoming the county's first Level II trauma program verified by the American College of Surgeons, we just do it.

But we are not done. Far from it.

It is absolutely essential that we continue to develop and grow services in neuroscience, heart and vascular, stroke programs and trauma care. The time is right to embrace new technology, such as robotics.

After all, that is the NorthBay way.

B. Konard Jones
President and Chief Executive Officer



4

On the Cover: State-of-the-art Technology

Neurosurgeon Edie Zusman, M.D., uses some of the most advanced, state-of-the-art technology at NorthBay Medical Center in her surgeries, whether she's removing a brain tumor or fusing a spine. She also works with a highly respected researcher to use personalized medicine in battling brain tumors.



10

A Trainer Triumphs

A horse trainer not only survived a potentially deadly kick in the face, but thanks to our trauma team's immediate response, her injuries are virtually invisible.

High-tech Tools In NorthBay's Pocket

Do the words "community hospital" conjure the image of a place where complex brain and spinal surgery happen on a regular basis? Or where life-saving orthopedic care is available 24/7/365? Where cutting-edge equipment and medical know-how allow cancer patients get their treatments close to home? Or where the parents of fragile newborns can keep an eye on them using their cell phones and a video monitoring system?

Chances are that unless you've had a stroke, a heart attack, a brain tumor or a traumatic accident, you don't realize these services exist in your local, community hospital. But they do.

That's because over the past decade NorthBay Healthcare has been systematically redefining the concept of a "community hospital."

Our primary and specialty services have grown from ground zero to 130-plus providers. We are now a proud member of the Mayo Clinic Care Network, one of only two in California. We have been designated as a Level II Trauma Center, a Magnet center for nursing excellence and a Baby-Friendly Facility. Have we mentioned that we're a Chest Pain Center? And a Stroke Center? The list goes on and on.

In this special issue we share with you some of the many advancements that are now being offered in your own backyard. That, after all, is in perfect alignment with our mission statement: **Compassionate Care, Advanced Medicine, Close to Home.** ☒

Contents | Summer '17

Better Health Through Technology

- 2 Complex Care, Close to Home
- 4 Brain Tumor Vanquished
- 5 Battle is Personal
- 6 A Future After Fusion
- 8 Saving the Shattered
- 9 Sim Lab Gets Upgrade
- 10 Trainer Triumphs
- 12 A TrueBeam Tactic
- 13 Seeking Cancer Connections
- 14 Shouldering a Replacement
- 15 Pumped Up by Treatment
- 16 Peeking into the NICU
- 18 Magic of Ultrasound
- 20 A World of Imaging

- 21 Germ-killing Robots
- 22 Roadmap for Recovery
- 23 A Team Approach
- 24 Massage for Healing
- 25 A Year of Collaboration

NorthBay News

- 26 Changing Landscape
- 27 Three New Daisies Bloom
- 27 Jubilee at 30
- 28 Welcome New Doctors
- 28 Viva Cinco K
- 29 Community Classes

<http://wellspring.NorthBay.org>



16

Peeking into the NICU

When parents can't be at their frail newborn's side 24/7, a new NICView webcam monitoring system allows them to keep an eye on their child via phone, tablet, laptop, from anywhere in the world.



21

The Force is With Us

Using UV Light, germ-killing robots have been deployed at NorthBay Healthcare's two hospitals to keep patient rooms protected.

Wellspring is published quarterly by NorthBay Healthcare, Solano County's locally based nonprofit health care organization.

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Complex Care Close to Home

Ten years ago, a patient had to leave Solano County for open heart surgery. Or treatment for a stroke or brain cancer. Or complex surgery for a broken pelvis. Or a damaged eyeball. The list went on and on. But not anymore.

While mega organizations often send patients out of the county to their larger facilities in bigger cities for specialized care, NorthBay has been systematically and strategically building a network that offers such services right here in Solano County.

“From neonatal intensive care to trauma to neuroscience, we have brought services home to Solano County, allowing patients to receive treatment here, instead of having to travel,” said Elnora Cameron, vice president for strategic planning.

NorthBay Healthcare is Solano County’s only homegrown health system, says Konard Jones, president and CEO. “We not only make all of our health care decisions right here in this county, we are residents, neighbors, family, friends and care providers. NorthBay has grown with Solano County and when it comes to saving lives, every minute counts. Having a health care system with the most advanced medicine in the county is a badge of honor.”

The growth is not by accident but by methodical design. NorthBay opened the county’s first Neonatal Intensive Care Unit in 1985, and two years later opened Vacaville’s first hospital and the NorthBay Cancer Center.

NorthBay Healthcare then began laying a broader groundwork for expansion to excellence, with the goal of serving at least 85 percent of patient care needs within the NorthBay system.

The first step was opening the NorthBay Heart & Vascular Center in 2009 and the next year the Center for Women’s Health. Soon, NorthBay was established as a Chest Pain Center and Stroke Center.

In 2012, NorthBay Medical Center was verified by the American College of Surgeons as a Level III Trauma Center. After the NorthBay Center for Neuroscience opened in 2013, the way was paved for the hospital’s verification to rise as a Level II Trauma Center.

“That allowed more critically injured patients to receive treatment and stay at NorthBay for follow-up care,” said J. Peter Zopfi, D.O., Trauma medical director. “We’re not just here for the initial care and resuscitation, but also for the after-care.”

The trauma designation not only benefits seriously injured patients, but others receiving care in the hospital, as a more complete support staff—from surgeons,

anesthesiologists, radiologists and lab techs—is now available 24/7 for all other patient services.

Surgical suites are busy all day, every day, where leading-edge treatments and technologies are undertaken. And, as part of a \$200 million expansion currently underway at NorthBay Medical Center, eight new state-of-the-art surgical suites are being built. When the project is complete in 2019, it will also feature 22 “patient rooms of the future,” and an expanded Emergency Department.

Not all the action is in Fairfield, either. Now that the NorthBay Cancer Center has moved to Vacaville, NorthBay VacaValley Hospital specializes in cancer care, with staff trained to treat oncology patients.

“We’re providing high-tech equipment and tools to provide patients the care they need, when they need it,” said Aimee Brewer, NorthBay Healthcare Group president, “and that’s just going to grow.”

That growth is also reflected in NorthBay Medical Group, which now includes more than 130 providers, up from 45 just five years ago. Their areas of expertise cover the full spectrum, from primary care, orthopedics, cardiothoracic surgery, infectious disease, rheumatology, urology and gastroenterology to psychiatry.

In 2016, NorthBay Healthcare became the first hospital in Northern California to join the Mayo Clinic Care Network, which now includes more than 40 health care organizations across the country and around the world. “We have many opportunities to be innovative. We are expanding and modernizing our facilities, which will help our physicians and clinicians redesign the way we deliver care,” Aimee continued. “It’s about working together to put the patient first. That’s when great care occurs.”

Healthy, High-Tech Additions

- ★ Total ankle replacement.
- ★ Partial knee replacement.
- ★ Comprehensive neurosurgical care, including personalized brain mapping for tumor care.
- ★ ERCP (Endoscopic Retrograde Cholangiopancreatogram) which uses an endoscope and X-rays to examine ducts of the liver, gallbladder and pancreas.
- ★ Onco-pulmonology care, involving cancer in the respiratory tract.
- ★ Interventional pulmonology using endoscopy and other tools to diagnose and treat conditions in the lungs and chest.

Months after her successful surgery, Ana Santos visits Dr. Edie Zusman and sees where her tumor—roughly the size of an apricot—was situated inside her brain.



Brain Tumor Vanquished Headache Led to Discovery of Tumor

Ana Maria Santos, 60, rarely gets headaches, but one day she got a doozy. “I don’t like to take any pills, but I took a Tylenol and called my husband, Armando,” remembers the longtime Dixon resident. “He didn’t seem to understand how bad it was.”

Armando, who works in environmental services for David Grant Medical Center at Travis Air Force Base, was surprised when she called again. This time he took her to urgent care, and then to the Emergency Department at UC Davis Medical Center.

After imaging confirmed a brain tumor, Ana was referred to a local neurosurgeon but the consultation was delayed for several weeks. Armando asked his colleague at David Grant, neurosurgeon Jonathan Forbes, M.D., what he would do, and that’s how Ana found Edie Zusman, M.D., a neurosurgeon and medical director for the NorthBay Center for Neuroscience, who has performed more than 1,000 brain tumor surgeries. “We were able to get an appointment right away,” she recalled.

Ana had a meningioma, a tumor that forms on the membranes that cover the brain and spinal cord just inside the skull. About 90 percent of these tumors are benign, but they can grow and cause serious problems.

Dr. Zusman told Ana she didn’t think it was malignant, but she couldn’t be certain until surgery. They discussed several options and Ana decided to wait until the end of canning season, so she could work the full season—June to October—at Campbell’s Soup Co. in Dixon.

Working eight hours a day, seven days a week, she didn’t have much time to worry about the impending surgery. “I told my friends at work that I was going to have brain surgery and they were so surprised,” she recalled. “They said, ‘You don’t even look sick.’”

Indeed, there were no symptoms. Ironically, even the initial headache, which triggered the imaging tests, may have been coincidental.

Leading up to the surgery, Ana focused on cleaning her house. “I was in deep cleaning mode. I knew I wouldn’t be able to clean once I got home from the surgery, so I kept my mind focused on taking care of details.”

As the canning season drew to a close, the company held a traditional end-of-season celebration for employees. The next day, family members came in from near and far; her three children, five grandchildren, a brother, a sister, a cousin.

“I wasn’t worried,” she recalled. “I trusted Dr. Zusman. I felt comfortable with her and knew she would do well.”

To prepare for the surgery, detailed images were taken via Magnetic Resonance Imaging (MRI) and then imported into a Stealth Neuronavigation Computerized Work Station. “We design our surgical targets and trajectories on the work station,” explained Dr. Zusman. “Once the patient is positioned for surgery, we do what’s called a surface rendering. It basically reads the bone and landmarks on a patient’s face. That’s a registration that allows the computer images to be linked with what we’re seeing in real time, in the operating room.”

Because neurosurgeons can specifically map out their surgical plans, we have a higher degree of safety and accuracy, explained Dr. Zusman. “We can do a better job removing the entire tumor, because we’re aware of where the anatomic structures and blood vessels are,” she said.

Working under the operating microscope, Dr. Zusman used an interhemispheric approach between the folds of the brain in a narrow area next to major blood vessels. During the five-hour surgery, she and her team were able to remove the entire tumor, including the dural membrane, where it originated, achieving a surgical cure. In addition, Dr. Zusman was able to operate below the top of the scalp, in such a way that the surgical area was easy for Ana to later obscure with her long, dark hair.

That meant a lot to Ana. “I really appreciated it as I started to heal, because it took a little time for the hair to grow back. It allowed me to twist my hair up in a knot and no one could tell that I’d had brain surgery.”

In support of Armando and Ana, Dr. Forbes accepted an invitation from Dr. Zusman to observe the surgery, and he witnessed the successful and complete removal of a 4-centimeter tumor, roughly the size of an apricot.

Only five days after her surgery, Ana walked out of NorthBay Medical Center and went home. A week later, she was walking through Costco with her daughter. And she was thrilled to be back in her garden. “That’s my therapy,” she said with a smile, gazing across her beautifully manicured back yard.

At her first checkup following the surgery, Dr. Zusman was amazed. “She told me, Ana, I barely recognize you,

you look so relaxed!” She said it helped that I was very active before the surgery,” recalled Ana.

She’s quick to point out that she hasn’t lost any memory, not one bit. In fact, her husband said they must have put a chip in, because she’s come back as sharp as ever, remembering many details of their life together.

“I’m blessed everything went so well,” said Ana, pointing out that she avoided radiation, because they removed the entire tumor. She only used pain pills for a couple of days, and after that, it was Tylenol all the way.

Now she’s looking forward to being back to work at Campbell’s this summer. She likes to stay busy. But she promises to listen to her body, and slow down when she needs to. And she’s taking time to count her blessings. ❧

The Battle Has Become Personal for Neurosurgeon

When it comes to attacking the most aggressive forms of cancer in the brain, it’s not just a job for neurosurgeon Edie Zusman, M.D. It’s personal.

Personalized medicine, that is. It’s a high-tech tactic focused on creating the perfect weapon to wipe out glioblastoma and other tumors.

It starts with the patient’s first surgery. If they sign a consent form, tissue removed as part of the standard of care is sent by courier to a lab in San Francisco.

Within hours, Liliana Soroceanu, M.D., PhD, a researcher with the California Pacific Medical Center Research Institute, takes the tissue and essentially grows the tumor over the next several months in her lab. Sequencing and pharmacological tests begin to see what drugs—including some in clinical trials—are the most effective in shrinking the tumor.

“We are trying to understand the specific characteristics of each brain tumor and thus design the best approach for that particular patient,” explained Dr. Soroceanu.

Although Dr. Zusman uses the tactic in her neuro-oncology cases, it is also used in melanoma and high-grade tumors of the breast, pancreas, colorectum, lung, liver and ovary.

Armed with the knowledge of how a patient’s unique tumor responds to specific chemicals, Dr. Zusman can then discuss options with her patient to determine the best course of treatment. “I believe it’s the medicine of the future,” said Dr. Zusman. “We’re taking medicine to an individual level.”



As her work schedule lets up, Ana Santos of Dixon is back to enjoying leisure time in her garden.

A Bright Future After Spinal Fusion



Marge Buckner of Vacaville had tried just about every possible approach to ending unbearable back pain when she met neurosurgeon Edie Zusman, M.D., in 2016.

Marge's troubles began almost a decade earlier, with an ice skating injury that led to numerous surgeries, treatments and procedures. Although each action provided some relief, headaches, leg pain and back pain persisted.

“My whole life was geared around the intensity of pain. But I wouldn’t give up.”

~Marge Buckner

“At that point, I needed an epidural every few months just to get through the day,” said Marge. “My whole life was geared around the intensity of pain. But I wouldn’t give up.”

Dr. Zusman remembers the first day she met Marge: “When I walked into the exam room, I was greeted by her backside,” she said. “She was bent over the exam table in such pain.”

Dr. Zusman was determined to find out exactly what was wrong, recalled Marge. “Someone cared enough to check into every detail. She came over, placed an arm on my shoulder and said, ‘You’re going to be OK.’ I believed her. I knew she wouldn’t give up on me, so I wasn’t about to give up on myself.”

Marge remembers one particular X-ray that Dr. Zusman ordered. The position she had to strike was memorable, she said, and it turned out to be worthwhile.

“She could see an area that had not been revealed in previous images,” said Marge. “It was an area that had never healed. I needed a spinal fusion.”

Dr. Zusman elaborated. “When Marge was lying down, the image was nearly normal, but when she bent over, you could see one bone slipping forward on the other bone. It made perfect sense—how her symptoms increased with activity.”

Marge had a condition called spondylolisthesis and needed a minimally invasive spine fusion.

▲ Marge Buckner of Vacaville is thrilled to be mobile again, after a spinal fusion by Dr. Edie Zusman took away her pain and returned her ability to move.



Dr. Zusman and neurosurgical colleague Dr. Jonathan Forbes made two 1.5-inch incisions on either side of Marge's spine and operated through small tubes under an operating microscope, using the “O-arm/Intraoperative CT and Stealth Image Guidance” to place pins down the long shaft of the bone, and rods to hold them in place. She was able to clean out the disc space and decompress the pinched nerve roots, placing a spacer, or cage, in the disc space to re-establish its normal height.

“If we had just looked at the MRI images, the abnormality would not have been visible. But we looked at the patient,” said Dr. Zusman.

When Marge took her first steps after surgery, she was stunned. “It was gone. My pain was GONE!” she exclaimed.

Today she can walk a block or more without her legs giving out. She's thrilled to be able to participate in water therapy at NorthBay Health-

Spring Fitness, where therapist Bob Blackwell keeps a close eye on her progress.

“She'll always be at risk for back health issues, but she knows she needs to stay on top of her health,” said Dr. Zusman, “and she's committed to doing so.”

Some days, Marge admits she pushes a little too hard. She's learning where to draw her line in the sand.

But bottom line?

“I am pain-free,” she said emphatically. “I am no longer taking any pain medication for my back. I'm living again and I couldn't be happier about it. Yes, there was a lot of hard work along the way. I had to follow doctors' orders and I did. I wore braces, I used my walker, I exercised, I wore a bone stimulator with an electronic pulse. And I listen to my therapists. And thank goodness I did, because it's all worth it.”

▲ Dr. Edie Zusman is able to use the O-arm/Intraoperative CT and Stealth Image Guidance system (the pale orange and white piece of equipment behind her) to perform complex spinal surgeries.

Bad Breaks, Great Outcomes

What happens when bones aren't just broken, they're shattered? Crushed pelvises, high-energy fractures to the knee, elbow and ankle joints, and even pediatric fractures—these are severe injuries that require complex surgical repair by highly trained orthopedists using the most advanced surgical innovations.

It wasn't all that long ago these cases had to be referred out of Solano County for treatment. But not anymore, said Cornelis Elmes, M.D., a NorthBay Healthcare orthopedic surgeon. "We not only keep the most complex cases here at NorthBay Medical Center, it's not unusual for us to receive patients from other hospitals."

As a Level II Trauma Center, NorthBay Medical Center is home not only to a cadre of orthopedic specialists but also surgical suites outfitted with the latest equipment best suited to repair even the most complex cases, according to Heather

Venezio, Trauma program director. It's a combination that has earned the NorthBay Orthopedics team a reputation for excellence in the region, she added.

Nicole Azevedo, 30, of Fairfield, learned first-hand how fortunate it could be to have top-flight care so close to home. "I went from experiencing the most horrific pain and being scared I was never going to walk again, to catching a football in the street with my family just a few months later," she says.

Nicole suffered a high-impact injury, in a rather unique accident. "I broke my pelvis on an inner tube. When people ask what happened, they can't believe it."

It was a freak accident, she explained. Last summer she and her boyfriend

were inner tubing on Lake Berryessa behind her sister's boat when—with arms linked—they suddenly hit a large wake and were flung up in the air.

"I came down, hit the inner tube, and then my boyfriend came down with his fully body weight on my back. I heard a pop and the pain sucked all the air out of me."

Nicole fell in the water and, because she couldn't move her legs, immediately struggled to keep her head above the waves. "The pain in my legs and groin was unbelievable. It was horrifying. I was choking on the water."

Friends struggled to delicately lift Nicole into the boat and slowly made their way back to the dock. "My sister, a nurse, called 9-1-1 and the paramedics were waiting for us. I asked them to take me to NorthBay Medical Center, because it was close to my home."

Only later did she learn that her decision was right for so many other reasons.

"A relative of mine is a surgical nurse at a medical facility in Roseville, and my family wanted me transferred up there. But then they looked up Dr. Elmes, who was treating me in the NorthBay Emergency Department, and they said, 'no, stay right there.'"

With the O-arm, surgeons can fix large fractures using only screws inserted through very small incisions.

Dr. Elmes has many years of experience reassembling shattered bones, having worked at Level I and Level II trauma centers in New York, Florida and California. He joins a team well experienced in treating not only pelvic fractures, but periarticular fractures—a break around or very near a joint like an elbow, ankle or knee—as well as open fractures, hard-to-treat bone infections and even pediatric fractures. The team is skilled in replacing knees, hips, shoulders and soon, ankles.

He and his team work in surgical suites that are equipped with the latest in surgical equipment, such as a Stealth Navigator for computer-assisted surgery, and an O-arm Surgical Imaging System that uses X-rays to allow the surgeon to more accurately navigate to the exact point of injury.

With the O-arm, surgeons can fix large fractures using only screws inserted through very small incisions, frequently in less time and with greater precision and accuracy.

And that's exactly the tool Dr. Elmes used to stabilize Nicole's fractured pelvis with a single screw.

After surgery, Nicole used crutches to keep weight off her hips. "I now only have occasional soreness. And, I have only have the tiniest of incision scars," she said.

"This whole process was made so much easier because all my after-care was just down the street," she added. "Dr. Elmes and the entire orthopedics staff made my recuperation so easy. They had a walker delivered to my home even before I was discharged."

While the injury was a horrible experience, Nicole is gratified by the outcome. "I was sure I would never walk again. And now I'm not only pain free, but working and running and playing with my daughter." ❧



The Simulation Laboratory team includes (left to right) Lacy DeQuattro, Eric Davis, Sarah Pepper and Orlando Rios.

From Babies to Blood Pressure: Sim Lab Offers High-Tech Training

After seven years and more than 700 births—including breach babies, C-sections and twins—Noelle, NorthBay Healthcare's Simulation Lab mother, is finally retiring, reports Lacy DeQuattro, Simulation Lab program coordinator. Enter Noelle II, a real birthing machine, who literally can deliver on command, under a variety of complex scenarios, all with the purpose of preparing NorthBay medical staff for any possible labor situation.

She comes with multiple bellies, so staff can practice palpating the baby or turning it, if it's not in the proper position. They can cut into a skin insert, just as if it were a real C-section, give an epidural or practice stitching, if she suffers a tear.

Noelle II isn't the only addition to NorthBay's Sim family. A new baby, Tory, is a high-fidelity neonate who can cry, move her arms and even turn blue. Medical professionals can find a pulse in her umbilical cord, arm and head.

Mother and baby are just two of many high-tech additions to NorthBay's state-of-the-art Sim Lab, which offered training to more than 6,000 clinical workers, physicians and members of the community in 2016.

"When I started here in 2012, we trained 800 people. That number has just exploded and it's going to continue to grow," said Lacy, who often takes her Sim family on the road, teaching first aid and resuscitation techniques at schools, local fire stations and community events.

NorthBay Healthcare uses the lab—designed to look like a two-bed hospital room—for ongoing training of its medical personal. Technicians sit in a viewing area next door and videotape procedures that are then played back during a "debrief" session.

"It's the best way to learn," said Lacy. "They often don't realize what they're doing until they watch themselves on video."

Four new, high-definition cameras, built into the ceiling, can capture 360 degree-angles of what's going on in the lab. Two new microphones have been installed, so techs can hear what's going on, and instructors can be heard from the observation room.

It means that instructors can even teach remotely, as the video is available via the Internet on any cell phone, tablet or laptop.

There's also a new portable system—a suitcase loaded with three cameras and a laptop—so the Sim classroom can be taken on the road—to NorthBay Medical Center, NorthBay VacaValley Hospital, or anywhere a class is needed, said Lacy. ❧

A freak boating accident left Nicole Azevedo with a fractured pelvis, but a high-tech surgical repair has her looking forward to summer on the water.

Trainer Triumphs



Thanks to Trauma Team, Wounds are Nearly Invisible

The kick came without warning.

One moment Green Valley horse trainer Katie LeDoux, 27, was walking a horse from its stall to the training ring, and the next she was facedown in the dirt.

The tall warmblood gelding had been stall-bound due to an injury and weeks of rainy February weather, and was just returning to work. Full of pent-up energy, it suddenly bucked and gave a joyful kick of freedom. Unfortunately for Katie, a hind hoof landed below her chin, breaking her jaw in three places.

"I didn't know what happened, but I started to cry when I saw blood and realized I was spitting out my teeth," Katie said. The accident happened so quickly that she had to rely on nearby witnesses for the full story.

A horse can deliver a potentially deadly kick with the force of up to one ton. Fortunately Katie was wearing a helmet and never lost consciousness. Within a few seconds, help

was at her side and 9-1-1 called. Paramedics rushed her to NorthBay Medical Center for the kind of complex medical treatment that didn't exist anywhere in Solano County just a few years ago.

That's because NorthBay's Level II Trauma team—already providing a level of acute care close to that offered at teaching hospitals—keeps even the most complex injuries here for treatment, thanks in part to the depth of support found on NorthBay's "call list."

"The American College of Surgeons requires Level II Trauma Centers to maintain a 'call list' of sub-specialists as part of their Level II designation," explained J. Peter Zopfi, D.O., NorthBay Medical Center Trauma director.

Subspecialists are physicians whose training gives them expertise in the more complex aspects of a certain area within their specialty. The collaboration of such experts is helping Katie make an excellent recovery.

"Our list of subspecialists is long, and we've been able to attract some very talented physicians to our program," Dr. Zopfi explained. "We also collaborate with medical personnel at Travis Air Force Base. Having so many specialists available means NorthBay Health-care treats many kinds of injuries that would have been sent to hospitals outside the county in previous years."

Katie arrived at the NorthBay Trauma Center with an open fracture and many broken and twisted teeth. A CT scan revealed that not only had her jaw been broken in three places, but she also had a small skull fracture. Trauma physician Haroon Mojadidi, M.D., called upon a neurologist for her skull fracture, an ear/nose and throat specialist, and an oral and maxillofacial specialist for the jaw fractures. Jason Marengo, M.D., was called in to provide a plastic surgery consult for her facial wounds, and has since taken the lead in her care.

"Our call panel is fantastic," Dr. Marengo observed. "The subspecialists are highly regarded physicians in our community who



contribute greatly to our trauma program. Having access to their expertise means we are able to deliver another level of care."

"Facial injuries are inherently complex," explained Tyler Nelson, D.M.D., M.D., the oral and maxillofacial surgeon who worked with Dr. Marengo to develop a plan of care for Katie's injuries. "There is a lot of anatomy involved—teeth, bones, nerves—but most importantly is the fact that her face has been injured and your face is how you interact with the world. I reviewed the films and saw the fracture patterns, missing and broken teeth and discussed with the team the nuances of the case. We all wanted to develop a treatment plan that would provide her with the best possible outcome. NorthBay's trauma team is very organized and fosters great lines of communications between all the specialists."

In the weeks immediately following the injury, Dr. Marengo performed two surgeries—one to place plates on her jaw to stabilize it, and a second surgery to reset the plates and realign her bite.

"The arch bars and bands I have now will stay in place until Dr. Marengo is certain my jaw fracture is stable enough without them,"

Katie said, "and then we will head into the tooth extractions, root canals and braces."

But to see her today, it's hard to believe she endured such an injury.

"At first I couldn't even move my jaw, but now I can and the nerves have come back," Katie explained. Fortunately, she didn't have headaches or much bruising after the accident. All that remains is a barely noticeable scar under her chin. It's only when she smiles wide—and she smiles a lot—that a visitor sees the bands and some missing teeth. Her dimpled smile and a positive and grateful attitude shine through.

"I am thankful, so thankful. It could have been so much worse. I really appreciate the team effort in my care. Dr. Marengo even came to my appointment with Dr. Nelson. I was really impressed. I trust my team. They all talk to each other and it makes this whole ordeal so much easier."

Katie holds no animosity toward the horse. In fact, she is really looking forward to riding again—as soon as her care team approves it—as well as moving off a liquid diet and enjoying a good dinner that includes steak and corn on the cob. 🌽

▲ Katie LeDoux will be back riding Seamus as soon as Dr. Jason Marengo, who has been overseeing her care, says her jaw is healed enough.

"I started to cry when I saw blood and realized I was spitting out my teeth."

~Katie LeDoux



A TrueBeam Tactic

Engineer Fascinated by SBRT Treatment

SBRT uses a specially designed coordinate-system to deliver a powerful dose of radiation right into the tumor, improving the cure rate.

When Ford Pray, 89, learned he would have to undergo stereotactic body radiation therapy (SBRT) to treat a lung tumor, the retired engineer's curiosity was piqued. What was this new treatment and how did it work?

"Being an engineer by trade I'm curious about everything," he said. "This experience was an education in itself and I stayed well aware of every step along the way."

Ford had been hospitalized in October for chest pain. A diagnostic scan revealed that his pain was due to a blood clot in his lung and one in his leg. The scan also found suspicious growths on both his left lung and thyroid gland.

His blood clots were dispatched with a prescription for blood thinner. What followed were diagnostic tests and biopsies to determine whether he had cancer. The tumor on his thyroid was found to be benign, the growth in his lung, however, was cancerous.

Because of his age, Ford's medical oncologist James Long, M.D., at NorthBay Cancer Center in Vacaville, recommended SBRT in place of surgery. Ford readily agreed, eager for the new experience and an up-close look at the equipment. He was referred to Florian Ploch, M.D., a radiation oncologist at the cancer center.

SBRT is a form of radiation therapy that focuses high-power energy on a small area of the body. It uses a specially designed coordinate-system to deliver a powerful dose of radiation right into the tumor, improving the cure rate.

This procedure became available when a new TrueBeam Linear Accelerator was installed in the VacaValley Wellness Center last year.

"I was the first patient!" Ford said.

He was happy to participate in a dry-run of the treatment—a day with the cancer doctors and staff working with the linear accelerator's representative to ensure everything was perfect for their first case.

"I was all eyes and ears around this equipment. They had to keep batting me down because I wanted to learn all that I could. I was asking 'How do you do that?' and 'What is this?'"

Ford's actual treatment took place during four visits in January. His tumor has shrunk and he now has regular CT scans to follow his progress. "Dr. Ploch and his staff were extremely thorough, every step of the way," Ford said. "All of the people who cared for me were absolutely fabulous."

Ford and his wife, Margrethe, celebrated their 50th wedding anniversary last year. He said they would often drive to the VacaValley Hospital campus to watch the Wellness Center under construction. When the building's open house was held last August, they were among the guests examining the bright new building and the state-of-the-art equipment inside.

"I was glad the building was there when I needed it," Ford said of the care he began at NorthBay Cancer Center just months later. ☒



Radiation Oncologist Florian Ploch, M.D., and retired engineer Ford Pray discuss the workings of the linear accelerator at NorthBay Cancer Center in Vacaville.

Finding Cancer Connections

You inherited your eye color from your mom and your hair color from your dad. Did one of them give you an elevated risk of cancer, too?

That question could now be answered through a new genetic counseling and testing service available at NorthBay Healthcare. Karen Vikstrom, who has more than 15 years of experience in genetic counseling, recently began offering this cutting-edge technology to at-risk patients through the NorthBay Cancer Center.

"What we know about genes and their connection to cancer has exploded in recent years," Karen explained.

"The first breast cancer gene, called BRCA1, was identified in 1994 and we now know there are dozens of genes that potentially cause breast and other cancers. In those 5 percent to 10 percent of individuals diagnosed with cancer, there is an inherited factor that we can often identify, and this leads to better treatment and management."

Previously, patients warranting genetic testing and counseling would have traveled to San Francisco or Sacramento, noted Teresa Langley, assistant vice president, Oncology and Neuroscience.

"Any NorthBay Healthcare physician—whether an oncologist, specialist or primary care physician—can refer a patient with certain red flags to Karen for a genetic risk evaluation," Teresa said.

Red flags crop up when recording a patient's medical and family history, Karen explained. For breast cancer, the three most common red flags are if a woman is diagnosed with breast cancer before age 50; if several members of the same generation have been diagnosed with breast cancer; or if it runs



"What we know about genes and their connection to cancer has exploded in recent years." ~Karen Vikstrom, genetic counselor

in several generations. Women with ovarian cancer at any age should also be evaluated.

Other red flags include a diagnosis of any cancer in anyone under age 50, or more than one type of cancer in the same person. A pattern of cancers may also be of concern, as researchers now know that some breast and ovarian cancer genes may also cause prostate and pancreatic cancer and melanoma. And a family history of colon cancers may point to another hereditary condition—Lynch Syndrome—a condition that increases the risk of cancers of the uterus, stomach, ovaries, small bowel, pancreas, urinary tract, kidney and bile ducts, and a slightly increased risk of prostate cancer.

Physicians who believe their patients would benefit from a genetic study can have the patient fill out a questionnaire that is then forwarded to Karen. If further investigation is warranted, the patient meets with Karen for a cancer risk assessment and she creates an even more detailed, three- to four-generation medical pedigree. If genetic testing is indicated, a saliva or blood sample is collected.

"It's like detective work," she explained. "I ask lots of questions about every individual in the family—those with cancer and those without."

Test results are usually available in two to three weeks.

A patient can also be self-referred for a study, Karen explained. Genetic counseling may be covered by insurance if specific criteria are met.

Patient privacy is paramount and protected by law. The Genetic Information Nondiscrimination Act of 2008 (GINA) prevents employers and health insurance companies from using a person's genetic information in employment or coverage decisions.

And, the results of the test are also protected under the Health Insurance Portability and Accountability Act (HIPAA) that requires providers, such as doctors, nurses, and hospitals, to keep your health information private.

"If we can identify people with higher-than-average cancer risks, we can implement a screening plan and hopefully prevent cancer or catch the disease early, when it is highly treatable," she said. ☒



Dr. Robert Peterson examines patient Duncan McCormack's range of motion.

Rancher Ready for Total Replacement

Rancher Duncan McCormack III of Rio Vista, 65, knows a thing or two about joint replacement. In the past few years he has undergone a hip replacement, knee replacement, and is currently recovering from his second shoulder replacement surgery.

More than 53,000 people undergo shoulder replacement surgeries each year in the United States. Most patients experience decreased shoulder pain and improved shoulder function, including range of motion, once they recover.

Like the hip joint, the shoulder joint is comprised of a ball and socket. During surgery, the damaged portions of the joint are replaced with artificial materials. Duncan had his right shoulder replaced two and a half years ago to correct the damage from a past sports injury.

Still, a lifetime of ranching can take its toll. Duncan was born on the family ranch and working sheep and cattle is in his blood. He and his wife Julie raised two children on

the ranch and he has no plans to retire or ever give up a life on horseback.

So when the pain in his left shoulder started to keep him from doing the activities he loved, he returned to orthopedic surgeon Robert Peterson, M.D., of NorthBay Medical Group in Vacaville.

"Dr. Peterson performed my right shoulder replacement and it came out wonderful," Duncan said. "I was fully recovered in three months."

As this year began, his left shoulder became so painful he couldn't comb his hair or even tuck in his shirt. In February, he was scheduled for a total shoulder replacement at NorthBay VacaValley Hospital.

"Dr. Peterson's staff prepared me well and I knew exactly what to expect," Duncan said. "My hospital stay was brief, with surgery on Monday and discharge on Tuesday evening."

And this time, he was in for a surprise—he only needed a partial joint replacement. "When Dr. Peterson started the surgery, he discovered that my socket (the part of the joint that includes the shoulder blade) was healthy. So he did a little 'spring cleaning' inside the socket and only replaced the ball of the joint."

Unlike knee surgery, where you are up and walking the next day, shoulder replacement requires 30 days of rest and healing before rehabilitation begins. At first Duncan wore a sling to immobilize his shoulder, but after a few days felt comfortable enough to let his arm hang at his side.

Improving his range of motion was the focus when his rehabilitation began. By the end of April, Duncan was immersed in shearing sheep and weaning lambs. He could not be happier. "Everything about VacaValley Hospital exceeded my expectations," Duncan said. "My compliments go to the entire organization. They improved my quality of life immensely." ❧

A Range of Options

TOTAL: This surgery replaces the original ball-and-socket joint of the shoulder with similarly shaped prosthetics.

REVERSE: During reverse shoulder replacement the surgeon switches, or reverses, the positions of the shoulder joint's ball and socket. This surgery is an option for people whose damaged rotator cuffs make them ineligible for traditional shoulder replacement.

PARTIAL: A partial shoulder replacement involves removing the arm's humeral head and replacing it with a prosthetic ball while keeping the joint's natural socket.

Pumped Up By Treatment

Stroke Survivor Can Walk Again With a Cane

Following a stroke four years ago, Antonio Perez, 35, couldn't stand for long and could only walk a few steps with the aid of a walker. It wasn't for lack of trying or physical therapy. It was the spasticity in the muscles of his right leg and arm.

Spasticity is the involuntary contraction of muscles when the patient tries to move a limb. This creates stiffness and tightness. When a muscle can't complete its full range of motion, the tendons and soft tissue surrounding it can become tight. This makes stretching the muscle much more difficult. If left untreated, the muscle can freeze permanently into an abnormal and often painful position.

Spasticity in the arm can cause a tight fist, bent elbow and arm pressed against the chest, interfering with a stroke survivor's ability to perform daily activities such as dressing. Spasticity in the leg may cause a stiff knee, pointed foot and curling toes.

Such was the case for Antonio until a year ago when his doctor, NorthBay Healthcare neurologist Ameer Almullahassani, M.D., suggested a Baclofen pump.

Baclofen is a muscle relaxant usually given orally, but sometimes that dose isn't strong enough to have much effect and increasing the dosage can cause drowsiness. Intrathecal Baclofen (or ITB) therapy uses state-of-the-art technology to overcome that problem.

"We insert a (digital) pump under the skin and connect it to a small catheter that is fed into the spine," explained

Dr. Almullahassani. "Then we program the pump to provide continuous dosing. By injecting the drug right into the spine, it goes to the brain and you get a much better result without the drowsiness."

The treatment is not for everyone. Before the pump is put in, a single dose of the drug is injected into the fluid around the patient's spine. "Then we check to see if there is any improvement," explained Dr. Almullahassani. "After these tests, most of the patients say they want it (the pump)."

That was the case for Antonio. "Before the pump, I couldn't really walk or stand because my leg was too

stiff. Now I am doing better. I can stand and walk with just a regular cane," he said.

"I would never have dreamed of this. You could see the change, right from the first test. At the time, my foot was basically pointed down and not going the right way. The Baclofen is straightening that out now."

NorthBay began offering the ITB therapy a year ago with Dr. Almullahassani's arrival. He praises the team approach at NorthBay. He works with a neurosurgeon to insert the pump as well as physical therapists, pharmacists and his medical assistant to coordinate the whole process.

Once the pump is in place, the dosage of the drug can be adjusted and thereafter the patient comes in every six months for a refill—a 5 to 10 minute office visit."

"The only other thing for the patient to remember is that the pump is in there and they are going to set off metal detectors," he added with a laugh.

For Antonio, who was the first NorthBay patient to get a pump, the device has made a huge difference. "When people see me, they can't believe it," he said.

"It makes my day when I see such improvement," Dr. Almullahassani said. "The best time for me is when the trial test is a success and I hear from the family, 'Wow, he's able to move!' Seeing the excitement in the patient is great. You are helping someone and that's what my job is really all about." ❧



Dr. Ameer Almullahassani and Antonio Perez discuss the placement of his Baclofen pump.

When You Can't Be There... Cameras Bring Baby Close



Leaving your baby in the Neonatal Intensive Care Unit (NICU) is always traumatic. Now, thanks to an innovative system called NICView webcam, parents can watch their baby almost 24/7 on their smartphone, laptop, tablet or computer.

It's an emotional roller coaster no parent wants to ride, but one thrust upon the Rico family when Evelyn Rico's pregnancy took an unexpected turn.

"At 29 weeks along, my water broke," Evelyn recalled. "They put me on bed rest and I was in

NorthBay Medical Center's Mother/Baby unit for 13 days. And then I went into labor. My baby came so early, we just weren't ready; we didn't have a crib or anything."

Born more than two months too early, little Ronin Rico grew strong and steady in the NorthBay NICU following his arrival on March 22. "His doctors say he is doing well for the most part, and he'll thrive," Evelyn reported. "But I can get very emotional—it's up and down all the time. The nurses here have been so helpful and supportive to our entire family."

With Ronin expected to be in the NICU for an extended time, Evelyn and her husband Justin—both active duty personnel stationed at Travis Air Force Base—juggled the challenge of staying connected with Ronin and his nurses while holding down jobs and caring for Ronin's siblings: Jaydn, 8, Landon, 6, and Jocelyn, 4, as well as Evelyn's 74-year-old mother, Filipina, who lives with them. The care and support they received from nurses and doctors in

NorthBay's Labor & Delivery, Mother/Baby and NICU was gratefully received, Justin said.

They are especially appreciative of the newly integrated technology in the NICU—NICView webcams—that made staying connected to, and bonding with, Ronin so much easier. And, it's technology no other NICU in Solano County has.

The NICView webcams were installed on 10 of the unit's 16 isolettes, and the live video stream allows parents to keep an eye on their infants 24/7. The images are streamed without sound through a secure online portal. After signing a consent form, parents are given log-in credentials they may choose to share with other family members or friends both near and far.

"Having a premature or sick infant that remains in the hospital after mom is discharged home can be a traumatic event," said Katie Lydon, R.N., director of Women and Children's Services. "Every family dreams of taking their baby home from the hospital, and when a baby requires the advanced care of a Neonatal Intensive Care Unit there is a sense of loss. Thanks to the NICView camera system our families can feel connected to their babies and their care team even when they are at home getting much needed rest or taking care of other family members."

The cameras were installed in early March, just a week after Ronin was born, and the technology they provide was greatly appreciated, Justin said.

While Evelyn was on maternity leave from her job as a military police officer, she stayed in the NICU as much as possible. While she was there, Justin assumed many of the duties of home.

"I did a lot of errands," Justin said. "I took the kids to school, brought them home, helped with Filipina and tried to be here."

But, his work as a firefighter for the Air Force requires two days on and two days off. Whenever he had a free moment, Justin had Ronin's webcam image running on his phone.

"The cameras were great," Justin said. "I logged on through my phone whenever I could. I checked on him all the time."

"I would turn on the camera first thing in the morning when I was home," Evelyn added. "Ronin's very active in the mornings and we could see him moving around and even see some smiles." The live streaming video was great for his siblings to see and bond with their little brother, and that, along with Skype, kept family members in Florida,

NICUView webcams, a newly integrated technology, allow parents to keep an eye on their infants 24/7.

Hawaii and Southern California up to date with progress and growth reports.

The 10 cameras were purchased with grant funds from Solano Community Foundation and donations from Cordelia Rotary, as well as the NorthBay Guild. Fund-raising efforts are under way to obtain six more cameras, so every bed in the unit will eventually be equipped with the technology.

In the months after installation, families used the cameras every day averaging more than 53 log-ins per day, from all over California and 19 other states, Korea and the United Kingdom, reports Julie Crouse, R.N., project manager for NorthBay's IT department, who helped install the system.

"My twins are 21 years old," Julie said. "If I'd had this service when they were prematurely born and spent a week in the NICU, I would have felt so much more comfortable and less anxious. Instead, I couldn't sleep, as I was separated from my babies and I drove the NICU nurses nuts with phone calls at all hours of the day."

While the NICView cameras offer additional peace of mind, they were only one element of what the Ricos say was a very good experience for them. "We grew quite close to all the nurses and doctors, even back when I was in Mother/Baby," Evelyn said, "and then in the NICU. They are all so wonderful, so caring."

"They answered all of our questions, were so patient, so reassuring," Justin added. "They even made a scrapbook for Ronin and we had this diary that helped us see where we were making progress and what to expect."

"Being in the military, we appreciate that level of detail," Evelyn noted. "We couldn't have gone through all of this without the support of the nurses and doctors here," Justin said. "They've been terrific."

The happy ending: The Ricos no longer need to use the NICView cameras because Ronin was able to go home with his family on April 25. As of June 9 he weighed a whopping 12 pounds, a long way from his 3.2 pounds at birth, reports his proud mother. ❧



Baby Ronin Rico is never far from view for his parents Justin and Evelyn, thanks to NICView webcam cameras.



▲ Dr. Jesse Dominguez demonstrates where a nerve bundle can be spotted near the collarbone, using advanced ultrasound technology.

The Magic of Ultrasound

Technology Produces Images, Helps with Pain Blocks

Many people are familiar with the use of ultrasound imaging in medicine—it's most commonly used to capture an image of a developing baby in the mother's womb. But advances in technology and training are enabling physicians to use ultrasound in even more advanced diagnostic and surgical settings.

At NorthBay Healthcare, ultrasound has become a useful tool in applying regional pain blocks and in cardiac diagnostic imaging.

Help Following the Nerves

Jesse Dominguez, M.D., medical director and chief anesthesiologist at NorthBay Medical Center, said ultrasound plays a key role in applying pain blocks during certain surgeries. "If someone is going to have surgery, or comes in with an injury, we think about the pain pathways that surgery or injury will take and strive to block that pain

impulse to the brain," he explained. Epidural or spinal blocks cut off the pain impulse from the spinal cord all the way up to the brain. "It works, but with ultrasound you can now follow the nerves out from the spinal cord and get as close to the injury as possible and block the pain right there."

The process requires clear and detailed imaging, said Dr. Dominguez, because once a nerve leaves the spinal cord "it has its own path and we have to follow it out.

"We now have the ability to image that nerve using an ultrasound," he said. "And we have special needles that send a brighter image to the ultrasound... so we are able to put the needle right next to the nerve. Then we can bathe the nerve in local anesthetic to block the pain from that point up to the brain. If we want to have pain control for a longer period, we can insert a catheter, take the needle out and then put in a pump to regulate the pain medicine over time."

This type of pain blocking can be helpful in recovery following certain surgeries, like those on the knee or ankle, because the pain block can be focused in such a way as to not interfere with certain motor function.

Another Special-Tee

One of the most advanced uses of ultrasound at NorthBay involves point-of-care ultrasound of the heart.

Dr. Adam Tibble, a cardiac anesthesiologist at NorthBay Medical Center, regularly uses ultrasound to conduct transesophageal echocardiography (TEE) imaging, getting an inside look at the heart to evaluate its function. "Cardiologists can do this, but at NorthBay I do it and that gives the cardiologists more time to spend with their patients," Dr. Tibble explained.

Because the esophagus is close by the heart, TEE provides better imaging of the heart. Dr. Tibble inserts a snake-like ultrasound probe about the size of a pinky finger through the patient's mouth and down their throat into the esophagus. The doctor has directional control and is able to point the device to capture an image of the beating heart.

"Then I tell the surgeon what we're seeing. For example, during a valve replacement we can do a pre- and post-surgical report on what it looks like and evaluate the heart function," he explained.

TEEs can also be done for procedure planning purposes. "I can give the surgeons a heads up of anything I see so they can adjust their operative plan," said Dr. Tibble. "I can tell if they are looking for a certain size of valve or if a portion of the aorta may need to be replaced."

Probing the Surface

Ultrasound technology is advancing in other areas of medicine as well. Hand-held surface probes are used in many ways, including in the Emergency Department.

"If a patient comes in from a car wreck with a hole in their lung, you could X-ray the injury but with ultrasound, you get a better image," explained Dr. Tibble.

Dr. Dominguez agreed. "Now when a patient comes into the Emergency Department, physicians can ultrasound the abdomen to look for free fluid (blood) and determine if surgery is needed," he said.

At NorthBay Healthcare, ultrasound has become a useful tool in applying regional pain blocks and in cardiac diagnostic imaging.

What's driving all these advances? Dr. Dominguez said the answer to that question is three-pronged. "Certainly some of it is because the ultrasound technology is getting better and NorthBay is investing in that advanced technology," he said. "But also, the tools (the probes and needles) are better. And the third prong is the knowledge base here is growing." ❧



Dr. Adam Tibble, a cardiac anesthesiologist, regularly uses ultrasound in his work.



Toshiba engineers precisely guide the 15-ton MRI magnet to its resting place at Solano Diagnostics Imaging in Vacaville.

Full Array of Imaging Options

The addition of a \$1.5 million state-of-the-art Magnetic Resonance Imaging (MRI) scanner on the NorthBay VacaValley Hospital campus in March was the final piece in the puzzle that defines NorthBay Healthcare’s complete array of diagnostic imaging equipment.

The new MRI—a Toshiba Vantage Titan, Open-Bore 1.5 Tesla—features quiet technology and high-definition scanning. It is also roomier for the patient. The MRI’s

ultra-short open bore offers up to 100 percent more clearance space above the patient. This allows patients to be scanned without having their heads inside the magnet for some tests. The MRI also performs a wider range of exams, from bariatric to breast and non-contrast imaging.

“No longer do people have to travel elsewhere or make appointments for

mobile units coming to town when they need a scan or an X-ray,” said Adrian Riggs, assistant vice president for NorthBay Health Advantage and Solano Diagnostics Imaging. “We have it all right here in Vacaville.”

The crown jewel of the collection is the \$1.8 million Toshiba Celesteion PET/CT imaging system, which is on the first floor of the VacaValley Wellness Center. It is the only stationery PET/CT scanning equipment in Solano County, in a civilian setting.

And even though David Grant Medical Center on Travis Air Force Base has a PET/CT scanner, physicians there frequently refer patients to VacaValley for ease in scheduling. “We’re actually able to serve a large number of non-NorthBay Healthcare patients,” explained Adrian, “We’re pleased to not only offer our radiation oncology, X-ray and scanning services to all patients, but we also have one of the few 3D mammography machines available for breast cancer screenings.”

When Adrian joined NorthBay Healthcare in 2006, he remembers an X-ray machine located just outside of NorthBay VacaValley Hospital. “In 2008, we added an ultrasound and bone density machine,” he said. “But technology really started changing in 2012. That’s when we placed our first 3D mammography machine in the VacaValley Health Plaza. We started stereotactic/3D breast biopsy later that year and took over the ultrasound breast biopsy program in 2013, becoming an ACR Breast Imaging Center of Excellence.”

Germ-Killing Robot Puts UV Light to Work

Two germ-killing robots are now helping disinfect patient rooms at NorthBay Medical Center and NorthBay VacaValley Hospital. Called Tru-D, a catchy nickname for “Total Room Ultraviolet Disinfection,” the 5-foot, 5-inch tall robots use ultraviolet (UV) light to eliminate harmful pathogens.

Tru-D doesn’t replace the staff that cleans hospital rooms between patients, said Mercille Locke, R.N., infection prevention manager. Rather it is an enhancement tool used in rooms following final cleaning whenever a discharged patient was treated for a drug-resistant bug. Tru-D is also used nightly to disinfect the surgical suites.

The robot is placed in a clean patient room and the door closed. Using a remote control, Tru-D is turned on and automatically self-adjusts to the size and contents of the room to deliver the proper dose of UV light.

UV light is a form of light that is invisible to the human eye. It exists on the electromagnetic spectrum between X-rays and visible light. UVC wavelengths, the strongest UV rays, are germicidal—meaning they are capable of inactivating microorganisms, such as bacteria, viruses and protozoa. This quality makes UVC energy an effective, environmentally friendly and chemical-free way to eradicate dangerous microorganisms in any environment, but especially within hospitals.

Tru-D has been clinically validated to eliminate up to 99.9 percent of drug-resistant super bugs, including C. diff (Clostridium difficile), MRSA (Methicillin-resistant Staphylococcus aureus) and VRE (Vancomycin-resistant Enterococci) in one single cycle.

A cycle depends on room size and averages 25 minutes. A randomized clinical trial funded by the Centers for Disease Control found that the Tru-D robot could reduce hospital-acquired infections by a cumulative 30 percent.

NorthBay Medical Center has not been using the robot long enough to validate those findings, but early reports are promising, Mercille explained.



Eric Blankenship, Environmental Services lead, demonstrates the Tru-D ultraviolet disinfection robot in a room at NorthBay Medical Center.



Fitness Specialist Julie Cassara walks Vacaville resident Suzanne Clark through her special set of exercises as part of a Movement is Medicine session at NorthBay HealthSpring Fitness.

Movement is Medicine

Personalized Training Program Offers Roadmap for Recovery

Three years ago, Suzanne Clark sat in her wheelchair at a Soroptimist International regional conference, waving her hands and smiling while club members danced around her during a friendly competition.

This year, wheelchair-free, she taught her friends the steps and led the dance.

Suzanne, 60, said her recovery from Guillain-Barre syndrome is nothing short of a miracle.

Guillain-Barre syndrome is a rare disorder in which the body's immune system attacks nerves. Its cause is unknown. It can spread quickly and cause paralysis in the entire body.

The illness came on out of nowhere, she says, remembering that she was in training for a 5K. She had lost

42 pounds and felt great. Then one day, her legs started bothering her. Her back hurt.

She tried a chiropractor, massage therapy and pain medication but nothing made a dent. Her doctor ran bloodwork and took X-rays, but didn't diagnose anything amiss.

"On Saturday morning, Sept. 28, 2013, I went back to bed and slept until 2 p.m. Then my hands and my face started bothering me."

She ended up in an emergency room where doctors recognized her symptoms and started five days of treatments that would save her life.

"I walked into the hospital, but by Sunday, I couldn't even stand up," she recalled. She was transferred to a rehabilitation center for three

weeks before she was released home—in a wheelchair.

Progress over the next two and a half years was slow, but steady. Her legs still tingle and her arms are still numb. She eventually was able to walk again, at first with a walker and then a cane, and to drive. But these milestones weren't enough for Suzanne, who wanted more.

That's why she signed up as soon as she could with NorthBay Healthcare's Movement is Medicine program. But first, Suzanne, who is not a NorthBay Healthcare patient, had to get her doctor on board.

"I joined HealthSpring Fitness when it opened in July, but I wasn't using it," she admitted. "I was too weak and intimidated. I needed help."

"I decided my life path was... designing exercise programs for people with medical conditions to help them move better, feel better and improve their quality of life." ~Julie Cassara

She found help in Julie Cassara, a fitness specialist who was tapped by NorthBay HealthSpring Fitness to design its innovative new Movement is Medicine program, alongside Adrian Riggs, NorthBay Health Advantage vice president and General Manager Mike Cole.

Julie's background in fitness and training began 17 years ago in Los Angeles, where she started working with clients who had medical conditions.

"Other trainers didn't feel comfortable working with them, but I found it fascinating," she said. She has gained a lot of experience working with this population. One notable experience was from her first case in college, a quadriplegic who volunteered his time to be a subject for the students. She was learning the technique of passive assistive stretching while working with him and he decided to have a little fun in the process.

"I was stretching out the muscles in one of his legs and his leg started to push back at me from a reflex reaction. He said, 'You cured me!' jokingly of course. He must have seen the surprised look on my face and followed by saying, 'I do that to all the newbies.' He was a great guy to work with and I learned a lot from him. His body taught me how to feel resistance and tell me when to push and when to stop. From this experience, I gained a strong desire to help people. I decided my life path was going to be designing exercise programs for people with medical conditions to help them move better, feel better and improve their quality of life."

Continued on Page 24 ...

HealthSpring Fitness: Not an Ordinary Gym

NorthBay HealthSpring Fitness is Solano County's only medical fitness center and membership is open to the public. But you don't have to be a member to participate in Movement is Medicine. In this program, local physicians don't just prescribe exercise as a form of medicine, but communicate with a fitness specialist to help create a specific and progressive fitness routine to fit their patient's needs.

"A big part of it is building the client's confidence so they can work toward those goals and flourish on their own, not just when a fitness specialist is around," said Julie Cassara, fitness specialist.

HealthSpring Fitness is managed by EXOS|Medifit, a worldwide industry leader in training professional athletes, the military and Fortune 500 companies, among others.

The initial launch involved NorthBay physicians, but has since been opened to providers outside of NorthBay Healthcare.

Although insurance will not cover the cost, special introductory package prices are available.

Qualifying conditions to participate in the program can include transition from physical therapy to post rehabilitation, managing an existing medical condition, needing to improve strength or lose weight in preparation for a medical procedure.

"We're seeing great results with our clients who have Type 2 diabetes, people who are dealing with more progressive conditions such as arthritis, MS and Parkinson's. We are also seeing people with cerebral palsy and stroke increase mobility and gain strength," said Julie. "We are so pleased with Movement is Medicine and feel fortunate to have a facility that can accommodate the program and support its participants."

Visit healthspringfitness.org for more information.



Fitness specialists at NorthBay HealthSpring Fitness focus on an individual's needs, goals and limitations as they establish programs for them.

Movement ...Continued from Page 23

Julie continues to help people see the benefits of movement through exercise, creating a better mind-set and most importantly, reassuring them that even with a medical condition, they can improve themselves.

Movement is Medicine was launched quietly in January 2017, and by mid-March, 50 patients had signed up, just through word of mouth. The program earned NorthBay HealthSpring Fitness the Solano County Innovator of the Year Award March 2. The program has been receiving new participants daily.

Julie spends time connecting with each client, gaining insight and helping to initially guide them into the program and place them with the right fitness specialist. The program is staffed with 10 fitness specialists who have extensive backgrounds in working with people in this population.

“Our specialists work collaboratively with each other to be sure our clients are getting the best program for their specific situation,” said Julie.

The job comes with a lot of research. In Suzanne’s case, Julie had to study up on Guillen-Barre syndrome. “She told me I’m not like her other clients,” said Suzanne. “I can’t exercise every day; it will overtax me.”

In fact, everything about Suzanne’s routine was specially created by Julie. “I try to mix it up so it doesn’t get boring, but we have figured out Suzanne’s strengths and weaknesses and we’ve talked about her goals,” said Julie. “So for eight weeks, I plan sessions that will help her achieve those goals.”

Suzanne couldn’t be happier with the partnership. “This is just what I’ve been waiting for,” said Suzanne. “I like this place,” she said, looking around the third-floor workout space. “It’s not just a gym; it’s a place of healing. That was my whole thing—I want a place where I can go to get better. I know I’ll be permanently disabled, but I’m not giving up.

I always say, ‘Don’t let your fear of today take away tomorrow’s happiness.’ Whatever life sends your way, you can change. But sometimes you just need a little partnership in health.”

Massage Therapy Is Part of the Program

NorthBay HealthSpring Fitness has launched a unique, treatment-based massage therapy program to promote healing and well-being for members and nonmembers alike.

Headed by Director Krystal Newton, the highly experienced, specially trained team of therapists offers a wide array of massage types, from Swedish and deep-tissue massage, to sports massage and trigger point/myofascial therapy.

There are unique add-ons, including lymphatic drainage, scalp or abdominal massage, therapeutic stretching, reflexology, Reiki and aroma-therapy, allowing for every massage to be customized to each client.

Krystal has been a board-certified massage therapist for seven years, graduating from Bryan College School of Massage Therapy. She also holds an associate’s degree in massage and bodywork.

HealthSpring Fitness is Solano County’s only medical fitness center and anchors one end of the VacaValley Wellness Center. At the other end of the building is the NorthBay Cancer Center, the Center for Diabetes & Endocrinology, the Center for Interventional Medicine and more.

“With patients just down the hall, I’m here to assure them that our team is equipped to help with healing and recovery,” said Krystal. She has provided therapy for post-cancer treatment, pre- and post-spinal surgery and joint replacement surgery. She also specializes in addressing migraines, headaches, sciatica and nerve dysfunctions, postural imbalances/scoliosis, circulatory conditions, and PTSD/anxiety disorders.

“Our mission is wellness in its most holistic form,” explained Krystal. “Our therapists are highly skilled, passionate healers who truly love the art of healing through touch.”

To learn more about the program, prices or to schedule an appointment, visit www.healthspringfitness.org/massage-therapy.cfm



◀ Director Krystal Newton (left) leads a team of highly trained massage therapists, including Ingrid Lozano and Nicole Matthews at NorthBay HealthSpring Fitness.

A Year of Collaboration

Mayo Clinic Care Network Gives Patients Choices

In the year since NorthBay Healthcare became a member of the Mayo Clinic Care Network, urologist Herkanwal Khaira, M.D., has seen firsthand how the collaboration is providing peace of mind and strengthening his doctor-patient relationships.

“If I have a patient and I tell him ‘You have prostate cancer and your treatment options are this, this and this,’ and they are struggling to make a decision, having another opinion that suggests the same process makes them much more comfortable to proceed,” said Dr. Khaira.

When the collaboration with Mayo Clinic was announced last year, NorthBay Healthcare became the first hospital in Northern California to become part of the network, which now includes more than 40 health care organizations across the country and around the world.

The relationship with Mayo Clinic gives NorthBay physicians access to more than 4,000 physicians and scientists for second opinions, another set of eyes or simply to weigh in on complex cases.

“Our doctors have really embraced this collaboration,” said Teresa Langley, assistant vice president, oncology and neuroscience at NorthBay Healthcare. “For the patients, it provides the confidence that NorthBay can provide them the most advanced medicine right here, close to home, and the physicians see it not only as a confirmation that they are following the right course with their patients but also, occasionally, Mayo Clinic provides them with information on new, more advanced ways to treat—alternatives they can follow if their main course of treatment is not optimal.”

This sharing of information and treatment options comes through the eConsult process, an electronic method for a Mayo Clinic specialist to answer a physician’s focused question about diagnosis, therapy or management through a review of the patient’s electronic medical record, imaging studies and laboratory tests. In the first year of the collaboration, 24 NorthBay physicians across 13 specialties submitted 122 eConsults.

Dr. Khaira submitted 14 eConsults, second only to oncologist James Long, M.D., NorthBay’s physician champion for the collaboration since its inception, who submitted 23.

Dr. Khaira used the eConsults and Mayo Clinic information in multiple cases including complex diagnoses like



Dr. Khaira

kidney cancer and in situations involving uncommon diagnoses, he said.

“For complex cases like cancer it gives the patient a second opinion that doesn’t require them to leave home,” he explained. “It used to be that patients would seek a second opinion from another hospital, where they would redo all the same tests. It was cumbersome for the patient just to get a confirmation of what we had already done.”

With eConsults, NorthBay doctors submit the patient’s information and test results and the experts at Mayo Clinic review and advise without the patient having to travel out of the area. And the Mayo Clinic reviews can often include information about clinical trials and studies that the doctor may not know about.

“As a doctor, I want my patients to have confidence in me and what I am telling them. To get these authoritative opinions reaffirms things we’ve discussed,” said Dr. Khaira. “They see we are on the same page and that ‘Hey, this guy knows what he’s talking about.’ It reinforces the doctor-patient relationship.”

Network Connection Shapes COPD Care

Nine NorthBay Healthcare employees traveled to Mayo Clinic in April to learn cutting-edge strategies for the care of patients with Chronic Obstructive Pulmonary Disease (COPD). They spent three days with Mayo Clinic’s COPD team and other members of the Mayo Clinic Care Network learning how to incorporate Mayo Clinic’s successful treatments into NorthBay’s practice.

Mayo Clinic’s COPD Hospital Readmission Reduction Collaborative was an opportunity for NorthBay staff to participate in training sessions at the flagship hospital in Rochester, Minnesota. “We spent our time learning about Mayo Clinic’s COPD process, what they’ve learned about the disease, and how we can incorporate their successes into our own program,” explained Mike Farley, COPD educator.



Construction (above) on the three-story addition to NorthBay Medical Center is on track for completion in 2019 (top photo).

Free Valet Parking Offered on Fairfield Hospital Campus

Free valet parking is available to patients and visitors at NorthBay Medical Center and the Gateway Medical Plaza across the parking lot from the hospital. The service is available Monday through Friday from 7 a.m. to 5 p.m. There are now two valet parking booths, one in front of the hospital's Welcome Pavilion and one in front of the Gateway building.

Follow the progress of NorthBay Medical Center construction on our website, NorthBay.org/hardhat.



A New Wing Takes Shape at NorthBay Medical Center


Construction is well underway on a \$183 million, 77,000-square-foot, three-story addition to NorthBay Medical Center in Fairfield. The new wing replaces older sections of the 57-year-old hospital and will include six state-of-the-art operating rooms, two cardiac catheterization labs, a modern cafeteria with indoor and outdoor seating, nutrition services, diagnostic imaging and supply rooms. Also included are 22 "patient rooms of the future" featuring the latest technology in health care and 16 more post-acute care beds.

This summer concrete is being poured for the second and third floors and the roof. The next major milestone will be completing the roof by mid-October, according to project development manager Eric Van Pelt.

Architect for the project is Ratcliff Architects of Emeryville; contractor is DPR Construction of Sacramento. Approximately 50 to 60 workers are onsite each day, with the new addition projected to be complete the first quarter of 2019.

Emergency Department Will Open Expanded Space in Fall


With the busiest trauma center in the county, NorthBay Medical Center is expanding its Emergency Department to accommodate a growing number of patients. The Fairfield hospital is projected to treat 47,000 emergency and trauma patients this year.

Phase 1 of the project, which involves transforming the old 7,000-square-foot hospital lobby into additional Emergency Department space, is expected to open this fall. It will include a new registration area, a new triage room, a manager's office, six new treatment bays, a new public restroom and a family consulting area. Phase 2 of the expansion remodels the existing registration, nurse's station, waiting room and three treatment rooms and adds four new rooms. It will be complete in early 2019. 


Three New Daisies Bloom

Three NorthBay Medical Center nurses are the proud recipients of the coveted DAISY award, presented to honor their outstanding patient outreach. Miranda Cariaga, Kari Crain and Roxy Salmeron all received their awards at separate presentations in front of their nursing colleagues this spring.




 Miranda was nominated for outstanding work with a very ill and frightened patient who was suffering from septic shock. She used her nursing know-how to keep him calm and reassure him he was going to be OK.



 Kari was nominated by a 63-year old Vietnam veteran who spoke out to sing her praises. He called his nurse "a woman of God wearing a nurse's uniform instead of angel wings."



 Roxy was thanked by the mother of a patient who wrote, "She communicates with us as people and not just a wristband to scan when medication is given. She took the time to let us know what medications were being given to my daughter and what they were for, what side effects might be and if we had any questions."

NorthBay joined the DAISY Foundation in December 2015 and has presented a total of eight DAISY awards.



Have you had an outstanding experience with a NorthBay nurse?

Nomination forms are available to download at NorthBay.org/DAISY.



Annual Jubilee Celebrates 30 Years



The Harbison Event Center at the Nut Tree came alive again for the 30th annual Solano Wine & Food Jubilee, held May 20 in Vacaville. More than 1,700 revelers enjoyed award-winning wines, foods and brews; danced to music provided by the Vino Banditos and the Time Bandits; enjoyed the camaraderie that comes with attending Solano County's best-attended fundraising event; and learned who won a brand new car in the Jubilee Raffle—Ray Goodson of Vacaville. The last time the Nut Tree hosted a public gathering was in 2009, and volunteers worked hard to spruce up the site for the event, which took on a "Wine Country Stroll" theme. In its 30-year run, the Solano Wine & Food Jubilee has raised more than \$5 million to support the programs of NorthBay Hospice & Bereavement.

Presenting sponsors were Al and Patt Shaw; Freeman Family & Cosmetic Dentistry; DPR Construction; Vacaville Buick/GMC, Nissan, Dodge and Hyundai; Western Health Advantage; and Brett and Mimi Johnson. 



NorthBay Healthcare Foundation Board Members (from left), Chris Sweeney, Dennis Landis and Dr. Lee Freeman enjoying the Jubilee.

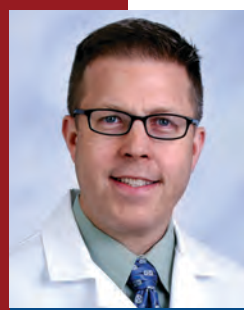
Welcome New Physicians



Hossein Dehghani, M.D., an interventional cardiologist, has joined NorthBay Medical Group in Fairfield. He earned his medical degree from Jefferson Medical College in Philadelphia. He completed his residency in internal medicine at Beth Israel Medical Center in Boston and a general fellowship in medicine at Harvard Medical School. Dr. Dehghani was chief fellow in cardiology at Tulane University Hospital in New Orleans. He also completed an interventional cardiology fellowship at UCSF in San Francisco. He was previously an interventional cardiologist and medical director of the Critical Care Unit at San Antonio Community Hospital in Upland, California. He is board-certified in internal medicine, general cardiology and interventional cardiology.



Jessica F. Powers, M.D., a hematology/oncology physician, has joined NorthBay Cancer Center in Vacaville. She was previously medical director of hematology/oncology at David Grant Medical Center, Travis Air Force Base. Dr. Powers earned her medical degree at Virginia Commonwealth University, Medical College of Virginia, with honors. She completed her internship and residency in internal medicine and a fellowship in hematology/oncology at Wilford Hall Medical Center in San Antonio, Texas. She is board-certified in internal medicine, hematology and oncology.



Michael J. Krier, M.D., a gastroenterologist, has joined NorthBay Medical Group. He was previously the chief of gastroenterology/hepatology at David Grant Medical Center, Travis Air Force Base. Dr. Krier graduated with honors from Wright State University School of Medicine. He completed an internship in internal medicine at Keesler Medical Center, U.S. Air Force, Biloxi, Mississippi, and his residency in internal medicine at Madigan Army Medical Center, Fort Lewis, Washington. He completed a fellowship in gastroenterology at Stanford University Medical Center.

 To see all of our NorthBay physicians, visit NorthBay.org.

Running for Kids, Tacos

Team NorthBay members showed up in force, wearing their “Your Wellness—It’s Why We’re Here” T-shirts on a sunny Saturday morning in May to run, jog and walk in the third annual Cinco K Run & Taco Fiesta. As many as 290 NorthBay employees, friends and family members signed up to participate—the largest contingent, according to race organizers. Many were captured in a team photo with the help of a drone.

The event is a fundraiser for the Fairfield Police Activities League, and NorthBay Healthcare was the presenting sponsor. In all, more than 700 participants turned out this year, an increase from the inaugural year, according to race organizers.

Team NorthBay’s fastest runner was Chris Dalton, an IT systems engineer, who finished third overall.

The event started and ended at the Anheuser-Busch Visitors Center and participants were treated to a beer garden experience complete with tacos. When all was said and done, the Fairfield Police Activities League reported receiving \$20,000 for its programs.



Community Health Education Classes

Healthier Living • A six-week class offered several times during the year, taught in conjunction with Solano Public Health and the Area Agency on Aging. Classes are free but space is limited. Call (707) 646-5469.

Caregivers’ Support Group • For anyone involved in caring for a loved one with Alzheimer’s disease or a dementia-related illness. Meets second Wednesday of month, 7 to 9 p.m. at the Adult Day Center. Cost: Free. Call (707) 624-7971 or (707) 624-7970.

Grief and Bereavement Support Groups • Adult support groups meet every other Wednesday, noon to 1 p.m., in Fairfield. Cost: Free. Please call (707) 646-3517.

Supporting Parents After A Loss • Meets the last Wednesday of each month from 6 to 7:30 p.m. at NorthBay Medical Center, Annex Building. Cost: Free. Call (707) 646-5433.

Widows Grief Support Group • Support group meets every first and third Wednesday noon to 1 p.m. Cost: Free. Call (707) 646-3517.

Compassionate Care Knitters • Meets second and fourth Mondays, 10 a.m. to noon. Cost: Free. Call (707) 646-3517.

Adult Grief Support Class, Journey Through Grief • Class meets weekly for eight sessions. Limited to 12 people per group. Participants follow a step-by-step approach using a book and journal. Cost: Free. For schedule and to register, call (707) 646-3517.

Loss Due to Suicide Support Group • Meets first and third Mondays from 6 to 7:30 p.m. Cost: Free. Call (707) 646-3517.


Veteran’s Grief Support Group • A grief support group for men meets on the second and fourth Thursdays from 10 to 11 a.m. Cost: Free. Call (707) 646-3517 for dates.

Pulmonary Education Series • Three-session course meets on Tuesdays from 12:30 to 2 p.m. at NorthBay Medical Center in Fairfield and on the third and fourth Tuesdays at 9 a.m. at the VacaValley Wellness Center in Vacaville. A new course begins each month. Cost: Free. Call (707) 646-5072.

Laugh Out Loud • A class on urinary incontinence. Learn the latest treatment options, including pelvic floor exercises. Cost: Free. Call (707) 646-4150 for class dates.

Congestive Heart Failure Class • Class meets every Wednesday from 12:30 to 1:30 p.m. at NorthBay Medical Center and on the first and second Tuesdays at 9 a.m. at the VacaValley Wellness Center in Vacaville. Cost: Free. Call (707) 646-5072.

New Beginnings Support Group • For stroke survivors, caregivers and family members. Third Tuesday of the month, 10 to 11:30 a.m. at NorthBay VacaValley Health Plaza, Suite 240, Vacaville. Cost: Free. Call: Elizabeth Gladney, (707) 646-4034.

 For a complete schedule of classes and events, visit NorthBay.org/calendar.

Maternal/Child Health Classes

All prenatal and maternal child health classes are free if you are delivering at NorthBay Medical Center.

Sign up at NorthBay.org or call (707) 646-4162.

Labor of Love

A four-week prepared childbirth class for moms and dads or coaches.

Labor of Love—Weekend Class

A prepared childbirth class for moms and dads or coaches. Held Friday evenings and Saturdays.

Newborn Care

Expectant parents are instructed on daily care, nutrition, safety and development for the first few months of life. One-session course.

Maternity Orientation and Tour

A tour of NorthBay Medical Center’s maternity unit. Information about hospital registration, birth certificates, and other pertinent information is provided.

Breastfeeding the Baby-Friendly Way

Babies are born to breastfeed. Learn normal newborn behavior and what to expect from a lactation expert. Support persons are encouraged and welcomed.

Car Seat Class

Educates expectant parents on the choosing and proper use of infant and child car restraints.



Here Comes #HealthTipTuesday!

Coming in August: #HealthTipTuesday on the NorthBay Facebook page! Starting Aug. 2, we will post a weekly health tip from one of our providers. Everyone who posts a comment or shares the tip to their own Facebook page will be entered in a monthly drawing for a \$50 Amazon gift card. Follow us on Facebook, you could be a winner!

 Visit [Facebook.com/NorthBayHealthcare](https://www.facebook.com/NorthBayHealthcare).



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