

# THEO

**MENDONIS WAS BORN AT TISCH HOSPITAL** on February 6, 2008, fifteen weeks early. He weighed 22 ounces—about as much as a loaf of bread. His father, Costas Mendonis, remembers the emergency C-section as an onslaught of feelings: anxiety, fear, pain, hope, love. Once the baby was freed, everyone held their breath. When Theo let out a loud cry, the tension broke. Theo's mother, Audrey Cohen, says, "I felt relief when I heard that squeal, but I knew he had been born on the cusp of life."

In the United States the mortality rate for babies born at 24 weeks' gestation is 50 percent. But Theo had had the good fortune to be born at a medical center with two of the most highly regarded neonatal intensive care units (NICUs) in the country, one at NYU Langone Medical Center's Tisch Hospital and one at its affiliate, Bellevue.

In 1990, when Karen Hendricks-Muñoz, M.D., M.P.H., chief of Neonatology, came to NYU Langone, the NICU was really just four beds in a corner of the Pediatric Intensive Care Unit. Today, the two NICUs have 54 beds, and as Level 4 Regional Perinatal Centers, they are responsible for supervising the care of one-quarter of the 130,000 babies born in New York City each year. More than 950 of those babies will spend time in one of the NICUs.

More important to Dr. Hendricks-Muñoz than the number of babies cared for is the quality of care her staff delivers. Even though regional perinatal centers care for the sickest newborns, Tisch NICU babies have better neurological outcomes. A key indicator of this success is their rate of intraventricular hemorrhage, which is extremely low. "Our IVH rate for grades 3 and 4 approaches zero," says Dr. Hendricks-Muñoz. "IVH are graded by degree: 1 is a tiny bleed; 2 is bigger; 3

THE  
SMALLEST  
PATIENTS

At Tisch Hospital's NICU, premies weighing as little as 21 ounces are given the best in developmental care. *By GAY DALY*  
*Photographs by BUD GLICK*



dilates the ventricles of the brain; and 4 means bleeding into the brain tissue. We really don't have 4s. We've eliminated hydrocephalus in our children. They don't need shunts."

Tisch NICU babies also go home sooner. Over 10 years, starting in 1996, Dr. Hendricks-Muñoz and her staff shortened the average length of stay for babies like Theo from 66 days to 43 days. This dramatic reduction meant a meaningful savings in cost of care, decreased exposure to infection, and families united at home more quickly. In 2000, everyone who worked in the NICUs was thrilled when the University Health System Consortium phoned to congratulate them because they had the shortest average length of stay for critically ill preterm infants of any university hospital in the United States.

**DR. HENDRICKS-MUÑOZ IS** frequently invited by other NICUs to talk about how the Tisch units do what they do.

While advances in neonatal technology have been stunning in recent years, and her staff makes best use of them, the secret of their success is that they were years ahead of other hospitals in initiating family-centered developmental care. This approach, based on the work of many researchers, was just being formalized when Dr. Hendricks-Muñoz started working at Tisch.

Family-centered care means recognizing that parents, not medical personnel, are the most important people for a baby, so the NICU is set up to include parents as part of the team rather than as bystanders who must watch and wait.

Developmental care means treating babies not as organisms that require procedures and drugs but as human beings who need care tailored to their stage of development. It means thinking about what a premature baby can't do and planning to meet those needs: for instance, recognizing that a 24-weeker like Theo is not going to be able to breathe on his own, or that a 30-weeker will have more developed lungs but still won't have the neurological circuitry that would allow him to drink from a bottle, so you need to teach him.

This approach means paying attention to every detail about a baby and his environment: Is that baby comfortable? Is the light shining through that broken shade bothering him? It means observing a baby carefully and deducing what he can't tell you in words. For preemies, the NICU team works to create a world that

mimics the womb. Lights and voices are kept low; pain is mitigated whenever possible; isolettes are covered with blankets so babies can get the long periods of uninterrupted sleep they need. Babies cared for in this way have lower heart rates and blood pressure, higher oxygen saturation, fewer infections, greater stability of temperature, fewer brain bleeds, and improvements in cognition and even bone density.

**AN OBSTETRICIAN WHO** identifies a high-risk pregnancy may see that his patient meets with a neonatologist from the NICU before her child is born. For Audrey Cohen, that meeting happened unexpectedly one night in January 2008, soon after she arrived in the emergency room, terrified because she was having labor pains 18 weeks before her due date. She and her husband Costas, a graphic designer, had always wanted children. They had needed IVF to conceive Theo, so a great deal was at stake for them. But until that frightening night, the pregnancy had gone smoothly. Once she realized the pains were coming at regular intervals, the couple collected a few things from their apartment, ran down the stairs, and grabbed a cab to the ER.

Soon after Audrey was admitted to the hospital in an attempt to stop premature labor, an attending physician and a fellow from the NICU visited her. They told her the NICU would send to the delivery room a team dedicated to the care of her baby. After stabilizing the newborn, they would find Audrey and tell her how he was doing. This visit was the beginning of a communication that may go on long after a family leaves the hospital. The Division of Neonatology's Neonatal Continuing Care

Martha Caprio, M.D., clinical director of Tisch Hospital's NICU



Program tracks and supports families for years, until the day a child is happily established at school. Not every baby will see that day, Dr. Hendricks-Muñoz cautions: Some will die; some will struggle with severe handicaps. There is only one guarantee, she says, for parents who come to the NICU: "They will never be alone."

Audrey and Costas felt the danger to their baby. Even after Theo let out that cry three weeks later in the delivery room, Costas was filled with dread when he entered the NICU to meet his new son. The infant was so tiny, his skin still gelatinous. "You may not be able to touch him," Nurse Ebony Schuett said, "but you can speak to him. Your child needs to know you are here with him fighting."

She warned Costas that they were in for a roller-coaster ride, but that it would be OK. Theo was "a feisty baby," which reassured her, because the feisty ones are most likely to survive. But for Costas, in tears, it was agonizing to see his child connected to monitors and tubes and a ventilator. For a long while, he stood there, unable to move. Suddenly he saw his brand-new son make the rock'n'roll sign, pointing index finger and pinkie. He felt the boy had sent him a message: "Rock on, Dad. Everything is gonna be OK," and he was finally able to go home.

**MARTHA CAPRIO, M.D.,** clinical director of the Tisch NICU and assistant professor of pediatrics, says, "A parent once pointed out to me that no parent chooses to be here. They didn't choose us as their doctors, which can be very hard." It gets harder when the baby has a setback or test results that are frightening, even devastating. Sometimes conversation is the only remedy available. "We try to speak to everyone every day," Dr. Caprio says. "No matter how sick the baby is, if I make that effort to speak to them, it's all right."

Dr. Caprio was appointed clinical director of the NICU in 1996 right after she finished the fourth year of her neonatology fellowship. Dr. Hendricks-Muñoz remembers that when Dr. Caprio protested that she was too young, "I told her she was wrong," and time has proven her right.

For the first few days, Theo seemed all right. But then he developed PIE (pulmonary interstitial emphysema), cysts in the lungs that may portend chronic lung disease. His extreme fragility meant his mother could not even take her son in her arms. "For five very long weeks," Audrey says, "I could only put my hands on him gently while he remained in his isolette."



Claudia Roman (left), one of many nurses who cared for Theo during his four-month stay in the NICU, adjusts the monitor while Theo's dad Costas Mendonis sits with him. The little blue hat hanging over the side of Theo's crib (right) was knitted for him by one of the night nurses.

I was dying to hold him. I would ask them every day if I could." She barraged the staff with questions, and worried they would get fed up, but it never happened. Instead, when she arrived each day, a doctor would give her a full report. Then, no matter how busy they were, they would ask: "Do you have more questions?"



**ON MARCH 6, A MONTH** after he was born, Theo took a sudden nosedive. Somehow, he had come in contact

with pantoea, a bacterium seen almost exclusively in Asia, which kills six out of seven. The new, automated blood culture system at Tisch may well have saved Theo. Where it once took 72 hours to get a blood result, the lab can, if an infection is virulent, produce an answer in an hour. Pinpointing the bacterium allows the clinician to choose the best antibiotic instead of dosing the baby with broad-spectrum drugs which create greater resistance. Research by Yang Kim, M.D., assistant professor of pediatrics, has demonstrated that this automated system reduces antibiotic use and shortens length of stay in the NICU. Immediate treatment with the right drug cleared the bacteria from Theo's system in two days, and diligent antisepsis stopped the infection from spreading to other babies on the unit.

Theo's first two head ultrasounds in February had been normal, but on March 13, Audrey and Costas learned that results of a third scan had been equivocal. Perhaps the scan showed only artifact—it's not easy to keep a newborn still long enough to do the test—but perhaps Theo had PVL (periventricular leukomalacia), a brain bleed that can cause severe cognitive or motor deficits.

At the time, everyone tried to take comfort in the fact that Theo was a notorious wiggler, but a week later a

repeat ultrasound produced the same result. Artifact or PVL? Dr. Caprio knew what this meant for these parents: "I saw it take a toll on them. They were learning to expect nothing."



**AS THE WEEKS PASSED,** Theo inched forward, gaining precious ounces. By the second week in April, he weighed two and a half pounds. Audrey listened as the doctors and nurses debated on rounds whether she could hold him. They tried to read Theo's cues to see if he was ready: How was he responding to sound and touch? What was his heart rate? Was he stressed—finger splaying, arching his back? They weighed pros and cons. It makes a lot of sense to leave a premie alone so he can sleep and conserve energy. On the other hand, a parent's touch is a powerful source of healing: in the NICU, it's called Kangaroo Care.

While germs were once considered so great a threat that visiting hours were sharply limited and parents were required to don gowns and gloves, research by Dr. Hendricks-Muñoz; Yihong Li, D.D.S.,

Audrey Cohen holds her son, Theo.



M.P.H., Dr.P.H., associate professor in the College of Dentistry; and others has demonstrated that direct contact from mothers meant helpful microbes would be transferred from Audrey to Theo and boost his immature immune system. There are other benefits: Skin-to-skin contact stabilizes temperature; decreases stress, heart, and respiratory rates; and improves oxygen saturation. The baby gains more weight, sleeps longer, and cries less. When Audrey finally lifted Theo into her arms, she recalls, "It was wonderful and scary because he was such a little bird. You could see his bony back and his bony little fingers. But I felt the warmth of his skin on my skin—I could have held him forever."

The PIE healed itself in time. A fifth head ultrasound on April 25 showed a normal brain. Theo's two big jobs now were to learn to breathe on his own and to feed.

It took him a long time to get the hang of drinking from a bottle, but this was absolutely normal. In the womb, babies don't learn to suck, swallow, and breathe, the three reflexes they must coordinate to feed, until between 33 and 36 weeks' gestation. Occupational Therapists Felice Sklamberg and Keren Eliav worked with Theo using a technique called external pacing. They let him take three sucks from his bottle, then gently tipped the bottle to stop the flow of milk, and waited until he took a breath. Patience is key, Sklamberg explains. Fortunately, Theo loved eating. His eagerness meant calories, which meant growth, which meant home might be on the horizon. On May 7, he weighed five pounds: he had doubled his weight in a month!

On May 22, Theo had a normal MRI of his brain. Audrey had gone back to her job as a management consultant but called and visited every day. The nurses felt like old friends to her. She asked for advice about what

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### 1980s

**WILLIAM J. COLE, M.D. ('80)**, has been named Physician of the Year by the NYU Langone Medical Center Auxiliary and was honored on October 27, 2008, at the auxiliary's 50th anniversary celebration at the Metropolitan Club.

**ROBERT M. AARONSON, M.D. ('88)**, received the 2008 Arizona Laureate Award from the American College of Physicians (ACP), Arizona chapter. He is the executive director of the Tucson Hospitals Medical Education Program, clinical associate professor of medicine at the University of Arizona, and associate director of the University of Arizona Internal Medicine Residency Program.

### 1990s

**JESSICA COOPER FOLTIN, M.D. ('90)**, director of the Pediatric Emergency Medicine and Transport Program at Tisch Hospital, and her husband, George Foltin, M.D., director of Pediatric Emergency Medicine at Bellevue Hospital, were honored by KiDS of NYU at its Springfling Gala for their contributions to both institutions.

**IN-KYU YOON, M.D. ('93)**, is a lieutenant colonel in the army, serving as assistant chief of the Department of Virology at the Armed Forces Research Institute of Medical Sciences in Bangkok, Thailand.

**RICHARD A. FALCONE, JR., M.D. ('95), M.P.H.**, is assistant professor of surgery in the Division of Pediatric and Thoracic Surgery, associate director of the Pediatric Trauma Program, and director of the Extracorporeal Membrane Oxygenation Program at Cincinnati Children's Hospital Medical Center.

**FRITZ FRANCOIS, M.D. ('97), ('07 M.S. MED.) '93 WSC**, has been appointed assistant dean for academic affairs and diversity. He completed his residency and gastroenterology fellowship at NYU. During his chief residency, he created the Department of Internal Medicine Organization for Nurturing Diversity (DIAMOND) to help with resident recruitment, mentoring, development, and retention.

**ANTHONY SHIH, M.D. ('97)**, has rejoined IPRO, an independent quality improvement and evaluation organization, as chief quality officer and vice president of strategic planning. He spent the past two years at The Commonwealth Fund, a national foundation working to improve U.S. health system performance, and held senior-level positions at IPRO from 2001 to 2006,

including vice president of healthcare quality improvement.

**NICOLE SUTTON, M.D. ('98)**, and her husband, Robert Sutton, are the proud parents of twin girls born on April 7, 2008.

### 2000s

**GERARD J. TEPEDINO, M.D. ('00), ('96 CAS)** and his wife, Jackie, welcomed the newest addition to their family, a baby girl, on November 5, 2008.

**DIANA LYNN ASCHETTINO-MANEVITZ, M.D. ('01), ('93 STEINHARDT)**, finished a fellowship in adolescent medicine at Schneider Children's Hospital and is now assistant professor of clinical pediatrics in the Division of Adolescent Medicine at Stony Brook University.

**CHIRAG R. KAPADIA, M.D. ('02)**, completed an endocrine fellowship at Children's Hospital of Philadelphia in July 2008.

**CHRISTINA A. TENNYSON, M.D. ('02)**, married Richard J. Naddeo on August 9, 2008, at St. Francis de Sales Church in Belle Harbor, NY. She began working at New York-Presbyterian Hospital in Manhattan in September 2008 after completing a fellowship in gastroenterology at Mount Sinai School of Medicine. Her husband is a counsel for the New York City Economic Development Corporation.

**JEANINE A. DALY, M.D. ('03)**, and Andrew H. Gillette were married on August 30, 2008 at the Woodbury Country Club in Woodbury, NY. She is a chief resident in dermatology at the State University of New York Downstate Medical Center in Brooklyn. Her husband is a marketing manager at American Express in Manhattan.

**RICHA AGARWAL, M.D. ('05)**, married Dr. Rajiv Seth Swamy on October 4, 2008, at the River East Art Center in Chicago. She is a fellow in cardiovascular medicine and her husband is chief resident for internal medicine at the University of Chicago Medical Center ●

#### Faint of Heart

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five children. "They've all been screened, and they don't have it," Jessica says. Yet genetic testing is the only way to know for sure. Even family members with normal ECGs may in fact be at risk: up to 35% of gene carriers have no symptoms—and a normal QT interval.

Even these "silent carriers" need to know their status so they can limit aggressive physical activity. What's more, certain prescription and over-the-counter medications—ranging from cold and

allergy products to antibiotics—can be life threatening to them. By prolonging the QT interval, some of these drugs can send people with long QT syndrome into cardiac arrest. For Jessica, familiarizing herself with this list has become crucial.

Family planning issues also loom large for everyone involved. One reason these genetic diseases continue to spread so widely throughout families is that people have children before realizing they are affected. In many cases, parents barely have time to process the tragedy of losing one child to long QT syndrome before learning that another of their children—or a grandchild, or a sibling—is also at risk. "We definitely want children," Jessica says. "And that's something definitely to consider: Do we want a kid who has this heart condition? So we've also considered adoption."

"The future is to try to cure these diseases," Dr. Priori adds. The promise of gene therapy is that a physician may someday be able to replace the defective gene in a patient's heart with a healthy one. That type of cure, however, is a long way off. In the meantime, Dr. Priori's team will continue to search for better drugs and therapies, and try to raise the level of awareness among physicians. "We need to be proactive and reach out," she says, "because every month, every year lost can mean more victims of sudden cardiac death." ●

#### Theo's Story

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to do after she took Theo home. How to handle reflux? The bassinet is on an incline—should I do that at home? When they bathed Theo and the other babies at night, they invited Audrey to come and observe. At first, Theo got a sponge bath, but eventually they put him in a round metal basin. "I hesitate to call it a tub," she says, laughing.

Finally, Theo was ready to go home. He was so ready that a nurse had nicknamed him Houdini. One day, she looked into his crib and saw an empty blanket. Theo was lying at the top of the bed, having shed the blanket he was swaddled in as if it were a cocoon he no longer needed.

On June 4, 119 days after he arrived in the NICU, Audrey buckled her seven-pounder into his car seat for the first time and carried him downstairs to the street where his father was waiting in the Jeep, dreaming about teaching his boy to swim and ride a bike, just as his father had taught him. ●