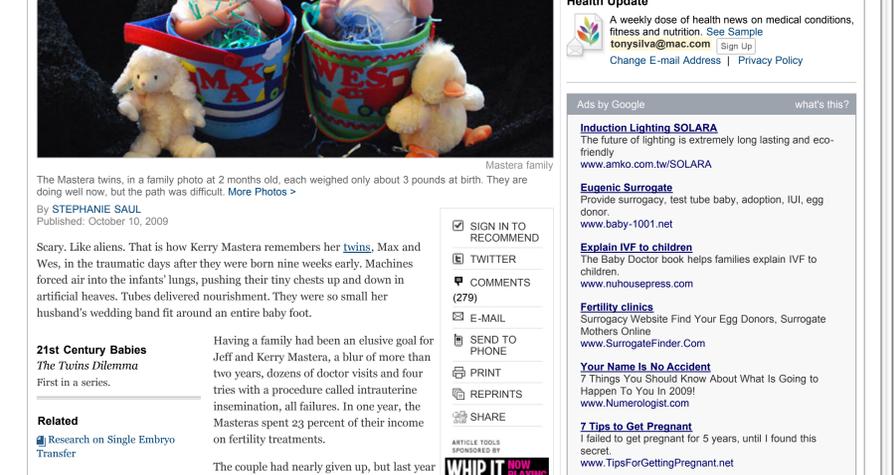


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21ST CENTURY BABIES The Gift of Life, and Its Price



The Mastera twins, in a family photo at 2 months old, each weighed only about 3 pounds at birth. They are doing well now, but the path was difficult. More Photos >

By STEPHANE SAUL Published: October 10, 2009

Scary. Like aliens. That is how Kerry Mastera remembers her twins, Max and Wes, in the traumatic days after they were born nine weeks early. Machines forced air into the infants' lungs, pushing their tiny chests up and down in artificial heaves. Tubes delivered nourishment. They were so small her husband's wedding band fit around an entire baby foot.

Having a family had been an elusive goal for Jeff and Kerry Mastera, a blur of more than two years, dozens of doctor visits and four tries with a procedure called intrauterine insemination, all failures. In one year, the Masteras spent 23 percent of their income on fertility treatments.

The couple had nearly given up, but last year they decided to try once more, this time through in-vitro fertilization. Pregnancy quickly followed, as did the Mastera boys, who arrived at the Swedish Medical Center in Denver on Feb. 16 at 3 pounds, 1 ounce apiece. Kept alive in a neonatal intensive care unit, Max remained in the hospital 43 days; Wes came home in 51.

By the time it was over, medical bills for the boys exceeded \$1.2 million. Eight months later, the extraordinary effort seems worth it to the Masteras, who live in Aurora, Colo. The babies are thriving and developing their own personalities — Wes, the noisy and demanding; Max, the quiet and serious. Like many other twins conceived through in-vitro fertilization, the Mastera boys will go down in the record books as a success — both for the fertility clinic that helped create them and the neonatologists who nursed them to health.

But an exploration of the fertility industry reveals that the success comes with a price. While IVF creates thousands of new families a year, an increasing number of the newborns are twins, and they carry special risks often overlooked in the desire to produce babies. While most twins go home without serious complications, government statistics show that 60 percent of them are born prematurely. That increases their chances of death in the first few days of life, as well as other problems including mental retardation, eye and ear impairments and learning disabilities. And women carrying twins are at greater risk of pregnancy complications.

In fact, leaders of the fertility industry and government health officials say that twins are a risk that should be avoided in fertility treatments. But they also acknowledge that they have had difficulty curtailing the trend.

Many fertility doctors routinely ignore their industry's own guidelines, which encourage the use of single embryos during the in-vitro fertilization procedure, according to interviews and industry data. Some doctors say that powerful financial incentives hold sway in a competitive marketplace. Placing extra embryos in a woman's womb increases the chances that one will take. The resulting babies and word of mouth can be the best way of luring new businesses.

Doctors are also often under pressure from patients eager for children, who have incentives to gamble as well. Frequently, they have come to IVF as a last resort after years of other treatments, are paying out of pocket, and are anxious to be successful on the first try. And many do not fully understand the risks.

Dr. William E. Gibbons, incoming president of the American Society for Reproductive Medicine, said his organization was concerned about the risks of twin pregnancies and would issue new guidelines at a meeting next week to further discourage multiple births. "People should be made aware of the concerns that we think twins are not a good outcome," Dr. Gibbons said.

The industry creates preterm infants with in-vitro and other fertility treatments even as government and nonprofit groups work to fight the nation's 12.7 percent rate of prematurity, regarded as a major national health care problem.

While IVF multiples are typically the children of affluent women, much of the effort at reducing premature birth has been focused on prevention and prenatal care for low-income women. A study released last week by the March of Dimes cited fertility treatments as one of the main reasons for a 36 percent increase in prematurity in the last 25 years.

The government estimates that caring for premature infants costs \$26 billion a year, including \$1 billion for IVF babies, expenses that eventually get passed through the system and on to businesses and consumers.

The unusual birth of octuplets in California in January notwithstanding, the American Society for Reproductive Medicine and its affiliate, the Society for Assisted Reproductive Technology, have succeeded in reducing the number of larger multiple births from in-vitro fertilization over the last several years.

The two medical organizations and the federal Centers for Disease Control and Prevention have been promoting the use of single embryos in many cases to reduce the number of twins. But that has not translated into major action at the 483 fertility clinics across the country. The latest figures from the industry show that women under 35, the group most likely to get pregnant from the treatments, choose to use single embryos in only 4.5 percent of in-vitro rounds.

"You can't convince a couple that having twins is a bad thing," said Dr. Maurizio Macaluso, who runs the C.D.C.'s women's health and fertility branch. "That's a major communication problem."

In 2006, a record 137,085 twins were born in the United States, double the number in 1980. Of that total, 23,284 were the result of IVF, according to government statistics. The number does not include twins born as a result of other fertility treatments.

Most fertility doctors acknowledge the potential problems with twins, whether conceived naturally or through fertility treatments. But many say that the good done by their industry — creating new families — outweighs the bad, and that twins are not such a risky bet because most are healthy.

"At the end of the day, when you dissect the statistics out, our patients are interested in establishing a family and a pregnancy," said Dr. Michael Swanson, a Colorado fertility doctor who treated Ms. Mastera.

It is a tricky cost-benefit analysis, however, and one that potentially involves the worst kind of collateral damage, the type that figures in the nightmares of expectant parents.

Erin and Scott Hare of Houston lost their twin daughter, conceived through in-vitro fertilization. Her surviving brother, Carter, who was born at just over 24 weeks, is doing well but needs therapy for lingering problems.

George and Narine Nazaretyan of Van Nuys, Calif., have twin daughters conceived through IVF. One of the girls, Natlie, has a severe case of cerebral palsy, which occurs four to six times as frequently in twins as in single babies.

Cutting down preterm births from IVF would be an easy way to make a small dent in reducing the nation's prematurity problem. Dr. Macaluso calls them "low-hanging fruit" — a partial solution that is within reach.

But there is concern among public health officials that the problem may instead grow as fertility treatments become available to more people.

"In the past few years, we have felt increasingly uncomfortable because we feel like we are sitting on the tip of the iceberg," Dr. Macaluso said.

Pressure for Success In the competitive marketplace for fertility medicine, success rates are the metric by which in-vitro clinics thrive or fail. The rates — meaning the chances of producing a baby at each clinic — are published by the C.D.C. and are widely used by couples to choose a doctor.

Congress passed a law in 1992 that required the data to be disclosed after some clinics were exaggerating their numbers to lure potential clients. But there is evidence that the law has had the unintended effect of pressuring doctors to transfer multiple embryos to maximize their success rates.

"If a person does not have as high a pregnancy rate as his neighboring competitor, they're going to lose those prospective patients," said Dr. David Kreiner, medical director of East Coast Fertility, a network of fertility centers based in Plainview, N.Y.

A busy fertility clinic can be extraordinarily lucrative, generating millions of dollars a year. And fertility doctors can take on godlike status in their communities for delivering their priceless commodities.

Knowing that prospective parents can easily seek IVF elsewhere, doctors give them unusual autonomy in deciding how many embryos to transfer.

For many in-vitro patients, the high cost of treatment is often a factor in making that decision. When Ms. Mastera had the procedure at Conceptions Reproductive Associates of Littleton, Colo., in September 2008, she was a candidate for single embryo transfer under industry guidelines. At age 32, and having never before undergone in-vitro fertilization, her chances for pregnancy were excellent.

Conceiving a child had become an obsession for the couple, who had met in 2000 while working as customer service representatives for Nextel. By 2006 they were married, living in a modest split-level home in Aurora and ready to start a family.

"I just told Jeff one day, 'I think we should get off birth control; I'm ready,'" said Ms. Mastera, who was 30 at the time. "He was like, 'O.K., let's do it.'"

After trying unsuccessfully for more than a year, the couple consulted two fertility specialists in 2007 and spent more than \$15,000 on the four rounds of intrauterine insemination.

"You're an emotional basket case because you're on these hormones," Ms. Mastera said. "We'd be constantly worried about money. Like constantly. How are we going to pay our phone bill this month? Or our mortgage? Because we're having to pay for all these fertility treatments."

In-vitro fertilization was the next logical step, but the price tag was even more daunting. Depending on the clinic, its location and the extra services included in the treatment, the procedure can run \$12,000 a cycle to more than \$25,000.

In 2008, the Masteras consulted their third fertility expert, Dr. Swanson at Conceptions. They chose him partly based on his clinic's high success rates as published by the Centers for Disease Control and Prevention.

Ms. Mastera's insurance would cover about \$8,000 for the procedure and drugs. Frequently, insurance does not cover anything. Almost \$18,000 in clinic fees and other costs remained for the couple, who proceeded to cash out their 401(k) and money market accounts and put the remaining balance on a low-interest credit card.

Like many families, the Masteras could not afford a second cycle. So when the couple was given a choice by their doctor of implanting one or two embryos, they decided to increase their chances with two.

"This was our Hail Mary pass," said Ms. Mastera, now 33. "We thought, let's just do it. At the time, it was like, twins, they can be fun. They are fun, but holy cow."

Some public health experts are frustrated by the disconnect between the medical risk of twins and society's perception.

Twins are celebrities and celebrities have twins. The pop culture media goes into overdrive when stars like Angelina Jolie and Jennifer Lopez give birth to twins.

"When they have their twins, it's a very acceptable thing," said Dr. Frank L. Mannino, medical director of the neonatal intensive care unit at the University of California, San Diego, Medical Center. The center expanded the unit last year, citing increased demand for the services, largely because of the use of fertility treatments.

Dr. Alan R. Fleischman of the March of Dimes, which has begun distributing literature discussing single embryo transfer, said a result of playing down the risks of multiple births is that many women undergoing in-vitro prefer to have twins.

"It's not just a matter of hoping that if you put two embryos in, you'll get one baby," Dr. Fleischman said. "There are many women who actually want to have two children and would like to have their full family with one pregnancy."

The Risks The problems began at week 24 of Ms. Mastera's pregnancy.

The human uterus is designed to carry one fetus. An ultrasound on Jan. 7 showed that the extra burden of twins was placing pressure on her cervix, causing the amniotic sac surrounding Max to begin pushing through.

"I was really stunned; I couldn't believe what was going on," said Ms. Mastera, who had not been having symptoms. "They came in and said, 'You are going into surgery right now.'" As doctors tried to comfort her, Ms. Mastera said, she began crying uncontrollably.

In a procedure called a cerclage, doctors pushed the sac back into her uterus, then stitched up her cervix.

"The doctor said that if she were pregnant with one, she would have been just fine," said her husband, Jeff, 31. "The sheer weight of the babies was just pushing them lower and lower."

After the procedure, Ms. Mastera was ordered to remain in bed at home. Doctors hoped she would make it close to her April due date. But on the night of Feb. 15, Ms. Mastera's water broke.

Her boys were born the next day, and were not the healthy babies she had dreamed of. "They wheeled me in, after I had recovered for an hour," she said. "And it was weird. They looked really frail and unhealthy."

Ms. Mastera said she was aware of the risk of prematurity with twins and had discussed the issue with Dr. Swanson before having the in-vitro procedure. Informed-consent documents given to patients by fertility doctors normally detail the increased risk of twins. But even with those increased risks, the actual number of serious outcomes like fetal death or brain damage is small.

While the average single pregnancy in the United States now last about 39 weeks, the average twins are born at just over 35 weeks, according to the Institute of Medicine. And there is emerging evidence that babies born at that time can develop learning problems.

"There's increasing evidence that the 34-, 35-, 36-weekers, the bigger prematures — and there are large number of those — have significant problems with learning later on, even though their mortality isn't high" said Dr. Richard E. Behrman, a pediatrician and former vice president and dean of medical affairs at Case Western Reserve University who led the institute's committee on preterm birth in 2006. "And that's not appreciated in the obstetrical and lay community."

According to one federal study, about 30 percent of all twins end up in a neonatal intensive care unit. Twins are eight times as likely as single babies to be born at very low birth weight — defined as under 3 pounds, 4 ounces. These are the babies who often need the longest care and face the biggest problems. Dr. Macaluso calls them "million-dollar babies."

Carter Hare, the son of the Texas couple, was one of them. His birth announcement in December 2006 gave a hint of the trouble: "Carter is born! 24 weeks 4 days."

His health was touch and go. "They gave us a very grim outlook," his mother, Erin Hare, said recently.

Doctors were aware early on that Ms. Hare's pregnancy might be complicated. Three months before becoming pregnant with in-vitro twins she had miscarried a single in-vitro baby because of a condition called incompetent cervix, a problem similar to Ms. Mastera's.

After becoming pregnant with the twins, Ms. Hare had her cervix stitched closed to keep her babies in place and remained hospitalized for much of the pregnancy.

At 20 weeks, an ultrasound showed that her baby girl's heart had stopped beating, an apparent result of a compressed umbilical cord. "It was hard," Ms. Hare said. "I actually at that point stopped accepting visitors. I put a 'Do Not Disturb' sign on the door."

In her solitude, Ms. Hare was fighting to continue carrying both her son and the lifeless body of her daughter, whose sac began bulging through her vagina, threatening the entire pregnancy. Doctors performed a second cervical surgery, continuing efforts to keep her son from being born before 24 weeks gestation, regarded as the point of viability.

Her son born four days beyond that milestone, 12 inches long and weighing one pound, 12 ounces. Carter spent 102 days in the neonatal intensive care unit at Presbyterian Hospital of Plano, near Dallas.

This year, Carter entered preschool.

"He's really a little miracle baby," said Ms. Hare, a tax accountant. The family has since moved to Houston. Despite initial heart and eye problems, Carter did not require surgery. He receives therapy for sensory problems that sometimes develop in premature babies.

"He wouldn't like being in a pool," Ms. Hare said. "He would scream. His senses are just off. He has an extremely high tolerance for pain, then sometimes he's real sensitive. The whole sensory process, when they develop outside the womb, it just doesn't develop. It takes longer."

Despite her troubled pregnancy, Ms. Hare tried another round of in-vitro after Carter was born, cervix together and requires an abdominal incision.

"A lot of people thought I was crazy, but I didn't did feel our family was complete yet," Ms. Hare said.

On April 29, 2008, a daughter, Lauren, was born by Caesarean section at 36 weeks, 4 days.

The Price Tag In March, the United States Chamber of Commerce and the March of Dimes held a luncheon in Washington to discuss preterm babies. "The human costs are staggering," Dr. Steven K. Galson, then the acting surgeon general, told the group. "The medical costs are staggering. That's why we're here."

"Today you're going to hear that preterm birth is not just a significant public health issue," Dr. Galson said, "but that it also impacts businesses and employer health plans."

The hospitalization and doctor's care for Ms. Hare and her son exceeded \$1 million. Most of that, about \$750,000 to \$800,000, was for Carter. The bill was picked up by the self-funded health plan of the Trammell Crow Company, the Dallas real estate investment company where Ms. Hare worked.

"The following quarter during the earnings release, somebody asked why there was a sharp increase in medical costs," Ms. Hare said. No one identified her, but Ms. Hare knew that her family had contributed heavily.

In Atlanta, the Centers for Disease Control and Prevention hired an economist to predict what would happen if single embryo transfer were used in a large number of IVF cases.

Dr. Macaluso, the C.D.C. reproductive health official, estimates that patients, businesses and insurance providers would save more than \$500 million annually, even taking into consideration the cost of extra in-vitro rounds, by lowering neonatal intensive care, special education and other costs of premature babies.

To reduce the number of twins, some clinics are experimenting with programs that provide IVF with single embryo transfer with free freezing of extra embryos and free transfer of frozen embryos if the first try does not work. Others are working to develop ways to identify the specific characteristics of a single embryo that will turn into a healthy baby.

Dr. G. David Adamson, a former president of the American Society for Reproductive Medicine, has advocated reducing the twins rate but says that the value of a baby should also be taken into account when discussing single embryo transfer.

"How many healthy babies do we want and what's the risk and cost to the individual and society of having a baby with problems," Dr. Adamson asked. "It's a complex question, and varies from patient to patient."

For the Masteras, the pain and anguish is fading as they watch their boys grow.

Although they are at risk for developmental problems because of their prematurity, the boys are meeting milestones. Max can now sit up on his own, and Wes crawled for the first time last week.

Ms. Mastera still feels guilty, worried that she did something to make her boys premature. "I don't know if I'll ever forget how horrible I felt about them coming early," Ms. Mastera said. "And I don't know if I'll ever forget how we struggled."

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