

MILLION- DOLLAR BABIES

By Spencer E. Ante

The cost of care for preemies is sky-high—some 15 times the expense of full-term infants and rising. Is there such a thing as too young?

Ryan Cole weighed 1 pound 15 ounces when he was born on May 3, 2005, after just 28 weeks in the womb. He spent his first 70 days in a neonatal intensive care unit, or NICU, kept alive by an array of specialized ventilators, intravenous feeding pumps, and advanced diagnostic gear, as well as round-the-clock attention from the hospital staff. Like many “preemies,” or babies born earlier than 37 weeks, Ryan was a handful. Afflicted with two different brain abnormalities, he threw up constantly, and his parents had to care for him amid a tangled nest of wires that snaked out of his crib, helping him breathe and eat.

One evening, a few weeks after he arrived home, Ryan stopped breathing. His parents, Eric and Andrea, came running when his respiratory monitor sounded an alarm. “We went into his room, and he was turning blue,” says Eric. He immediately dialed 911, and when the ambulance reached the family’s home in Kensington, Md., Andrea hopped in the back with Ryan, and Eric jumped in his car to follow them to Children’s National Medical Center in Washington, D.C. At the hospital, doctors hooked Ryan to a machine that helped him

breathe and upped his dose of a drug to stimulate lung function. In coming weeks, there would be other life-threatening events, but this time, Ryan was able to return home after one night in the NICU.

Preemies are a quickly expanding class of patients in the U.S., Britain, and other advanced nations. And the costs and technical challenges of caring for them are a growing source of controversy. Nearly 13% of all babies in the U.S. are preemies, a 20% increase since 1990. A 2006 report by the National Academy of Sciences found that the 550,000 preemies born each year in the U.S. run up about \$26 billion in annual costs, mostly related to care in NICUs. That represents about half of all the money hospitals spend on newborns. But the number, large as it is, may understate the bill. Norman J. Waitzman, a professor of economics at the University of Utah who worked on the National Academy report, says the study considered just the first five years of the preemies’ lives. Factor in the cost of treating all of the possible lifelong disabilities and the years of lost productivity for the caregivers, and the real tab may top \$50 billion, Waitzman says.

LOST WORK

In the U.S., corporations handle most of the financial burden. Employers generally cover some or all of the hospital charges in their health plans, and they also must deal with lost work hours of staff who spend weeks, sometimes months, attending to their premature

infants. Corporations pay out nearly 15 times as much for babies born prematurely in their first year of life as for full-term babies, at an average cost of about \$41,000 per child. For the earliest of the preemies, who are born in fewer than 28 weeks and spend up to three months in the hospital, the tab is higher. Says Waitzman: “The million-dollar babies are there.”

Ryan was not a million-dollar baby, but he wasn’t far from it. The cost for his first two months in the hospital exceeded \$400,000, not including certain surgeries and procedures. Because Eric is a technology security expert at the U.S.

Ryan Cole, a former preemie, with his parents



Energy Dept. and Andrea is an intelligence analyst for a government contractor, the family had good health insurance through the Blue Cross Blue Shield Federal Employee Program. They could also navigate the government bureaucracy and get Ryan qualified for Medicaid, which covered the bills that Blue Cross didn’t. To help pay for a nurse, they applied for another state program in Maryland. “We used to play a game: How many bills would we get?” says Eric. “We got up to 12 per day.”

A combination of economic factors as-

sure there will be many more couples like the Coles. Hospitals want NICUs because they are profit centers, like cardiac units. Health-care giants such as General Electric and Abbott Laboratories are eager to stock NICUs with devices and drugs. And parents and doctors want to do everything possible for their infants. Their concerns have already led to action in Congress. In 2006 the U.S. passed a law, the Preemie Act, to increase federal support for research into prematurity. The goal is to reduce rates of infant mortality due to preterm births and to improve care for pregnant women who may be at risk. As part of this legislation, the Surgeon General is hosting the office's first-ever conference on preemie care on June 16 in Rockville, Md.

Health issues are the main focus of the conference, but debates are swirling around the costs and risks of early intervention. Technological breakthroughs are allowing physicians to save babies at younger and younger ages. Births at 28 weeks are now routine, and the outer edge of viability is 22 weeks. In the next three to five years, doctors could push the threshold to as low as 20 weeks, at which age the infants would weigh about 1 pound, measure 10 inches long, and require even more costly and complicated treatments.

Does this relentless push to care for ever younger infants serve the interests of the babies, their parents, or society? Critics of the trend note that about one-third of preemies suffer from severe disabilities such as cerebral palsy, chronic lung disease, and blindness. A 2006 report from the Nuffield Council on Bioethics, an independent British group, recommended that preemies struggling for their lives after 22 weeks of gestation should not be given intensive care.

The Nuffield report ignited a firestorm over the ethics of early interventions and the impact on the children and their families. The ProLife Alliance, an anti-abortion lobby, urged hospitals to lower the viability threshold for preemies to 20 weeks. But that doesn't sit well with many experts in preterm births. In an April, 2008, report in *The New England Journal of Medicine*, researchers at the National Institute of Child Health & Human Development in Washington concluded that "extending intensive care to the most immature infants would entail considerable suffering, resource use, and cost in order to benefit only a small proportion of infants." Elderly patients who are subjected to painful, drawn-out hospital procedures can urge doctors not to take further drastic measures; preemies who suffer through heroic interventions have no such voice.

The cost calculations are just as controversial, but most health-care economists seem to agree that spending on preemies offers a high rate of return for all but the earliest-stage infants. The reason? The money improves both the quality and length of life, which yields big economic benefits. Between 1960 and 2000, the U.S. infant mortality rate—the rate at which babies less than 1 year of age die—dropped 73%. It fell from 26.0 to 6.9 deaths per 1,000 live births, accord-



Staff care for a preemie at Children's National Medical Center in Washington, D.C.

ing to the Centers for Disease Control & Prevention. The staff at Children's National consider this a huge triumph. Billie Lou Short, NICU director at Children's National, says the typical 28-week-old preemie had a 20% rate of survival in the 1980s. Now those infants "have a 90% survival rate and considerably reduced side effects." The percentage of such children with permanent disabilities has dropped to about 15% from as high as 40%, she says. Ciaran S. Phibbs, an associate professor at Stanford University's Health Research & Policy Dept., adds, "NICUs have had a dramatic positive effect."

The money society invests in low-birthweight infants who survive produces a high rate of return, according to Harvard professors David M. Cutler and Ellen Meara. They argue it is much more cost-effective than, say, coronary bypass surgery. Admittedly, it is hard to calculate the value of a life in terms of financial returns. Regardless, "the benefits [of preemie care] are substantially greater than the rise in costs," insists Meara, assistant professor of health-care policy at Harvard Medical School. She also notes that innovations in preemie care, such as ventilator technologies and surgical procedures, can be applied to full-term infants, greatly amplifying their social impact.

Experts can debate the merits and morality of earlier interventions. Either way, NICUs are likely to flourish because the business proposition is so compelling. When you add up the million-dollar imaging machines, the incubators, the expensive drugs, diagnostics, nutritional products, and physician services, neonatology is a multibillion-dollar market.



For hospitals struggling with cost overruns in other areas, NICUs can be havens of healthy revenue growth and profits. Children's National sets the goal of 4% profit margins overall, but NICU profits can be double that. Last November the hospital unveiled a \$75 million tower that features various specialty units to treat heart and brain problems of preemies. Its expansion plans include a second NICU that will open in 2009. It will have 54 beds, boosting Children's total preemie capacity by 25%. All of the rooms will be private and will be equipped with Internet systems that allow neurologists to monitor brain function from their homes.

EARLY DETECTION

New technology suffuses every corner of Children's NICU. On a sunny day in late February, the hospital is abuzz, with nurses and doctors scurrying around the floor, hovering over the various cribs and warmers that contain the preemies. Tara Taylor, the hospital's 30-year-old nurse manager, patrols the unit and points to the latest use of ventilators that preemies with underdeveloped lungs depend on. One preemie born at 24 weeks is hooked up to a ventilator and a computer that controls nine intravenous pumps to dole out antibiotics, sedatives, and other drugs.

One of the frontiers in obstetrics involves spotting a likely premature birth before it occurs. Over the past few years many women have begun taking a test that allows their obstetricians to predict with 99% accuracy if they are at risk for having early labor. Produced by Adeza Biomedical, the fetal fibronectin test predicts preterm birth by measuring the presence of a protein found in vaginal fluid. Women who test negative gain peace of mind, while those who test positive may have the option of taking steroids or other drugs that accelerate the fetus' development.

Parents such as Eric and Andrea Cole

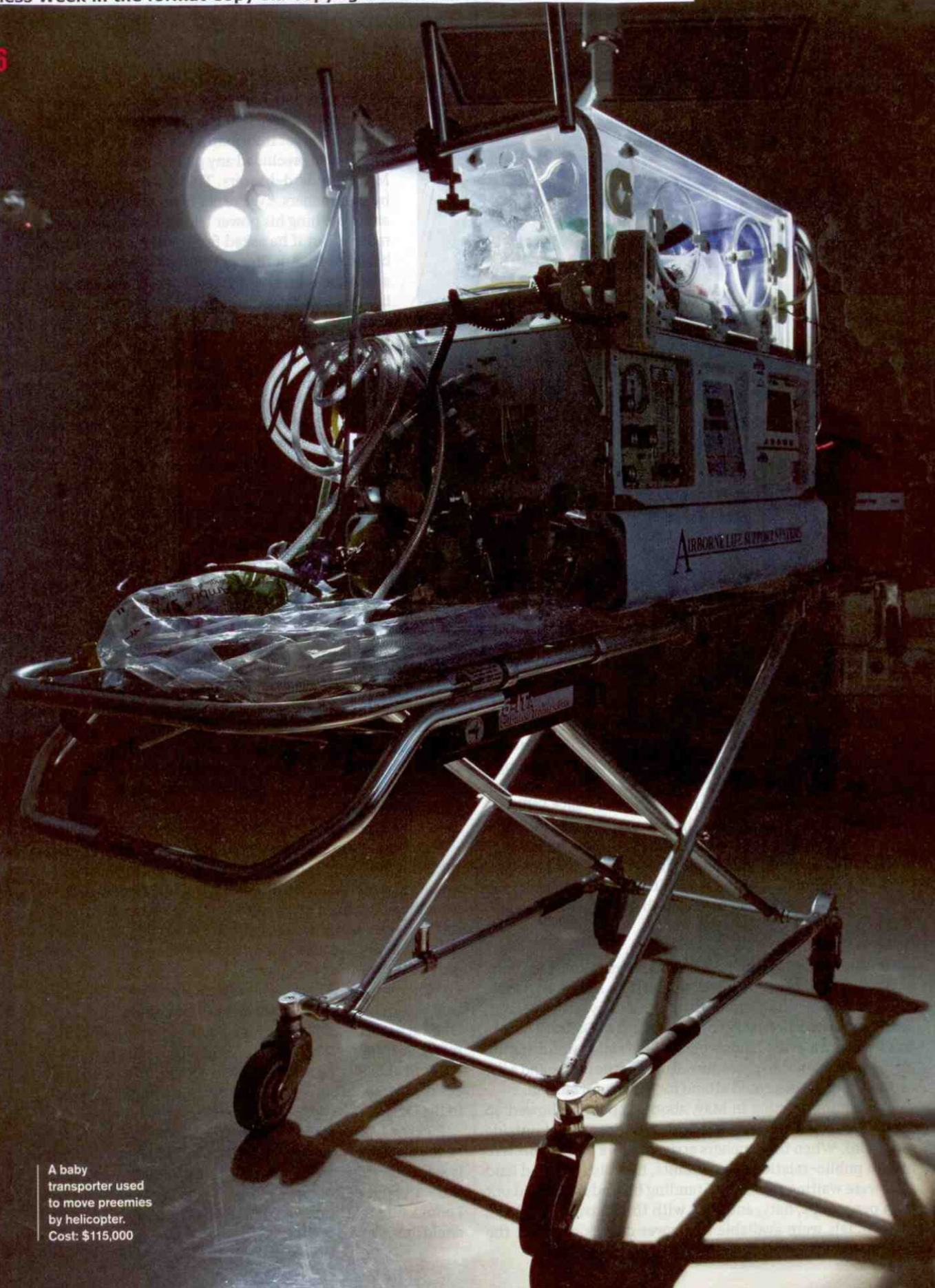
are often ill prepared for the challenges of caring for preemies in the first few years of life. "When Ryan came out, I don't recall him making any noise," says Eric Cole. "I didn't appreciate the situation until two doctors came in and started talking about survivability." Then came Ryan's breathing crisis. And three weeks later, Ryan let out a strange cry of pain that spooked his parents. They drove him back to the hospital, and doctors rushed him into radiology, where X-rays revealed air bubbles trapped in his intestine. Ryan had necrotizing enterocolitis, an intestinal disease that can cause destruction of the bowel. It is common in preemies, many of whom have underdeveloped digestive systems. Babies who aren't treated quickly can die from malnutrition or infection. The doctors saved Ryan by draining the air and fluid through a tube down his nose. It took him six weeks to heal.

In the course of these procedures, Eric and Andrea learned more than they ever wanted to know about ultrasound, CT scanners, MRI machines, and emergency surgeries of all sorts. By the spring of 2006, Ryan Cole was suffering the frightening effects of one of his birth defects, hydrocephalus. Fluid was accumulating under his skull, pushing the bone outward and putting pressure on his brain. Doctors inserted a shunt to drain fluid from the brain into the abdomen, but it failed within 48 hours, requiring more brain scans and a second operation. As he recovered from this operation, Ryan was struck with a new affliction. It began with a twitch, but in a matter of hours, the entire left side of his body was paralyzed. For the fourth time in less than a month, the Coles packed their child, drooling and vomiting, into their car and took him to the ER. Ryan was having seizures, which doctors eventually quelled with prescription drugs.

Eric and Andrea don't question whether the high emotional and financial costs of keeping Ryan alive were worth it. They hope the care Ryan receives at Children's National will one day allow him to lead a normal life. Developmentally, Ryan still lags his peer group. He uses sign language to communicate. But every day he's talking more, adding phrases. "His new word is 'doo-doo,'" says Eric proudly.

The Coles have started a foundation to help raise awareness and funding for one of Ryan's handicaps, a brain disorder called Dandy-Walker syndrome. In May, President George W. Bush honored Eric by making him a member of the President's Committee on People with Intellectual Disabilities. This June the Coles hope to take Ryan off of his seizure medication and remove the feeding tube from his stomach. And in the fall, Ryan will enter a special-education preschool. These days, "the challenge is to keep Ryan from running through the living room and jumping," says Eric. "I'm not so naive as to believe he is doing what his peers are doing. But I believe he will catch up. He can achieve any milestones and surpass them." |BW|

WHEN YOU ADD UP THE IMAGING MACHINES, DRUGS, INCUBATORS, DIAGNOSTICS, AND DOCTORS' FEES, NEONATOLOGY IS A MULTIBILLION-DOLLAR MARKET



A baby transporter used to move preemies by helicopter. Cost: \$115,000