

heart begins to race. The blood vessels in the skin constrict, increasing pallor—NASA scientists have even used skin sensors to detect space sickness in astronauts, who are sometimes reluctant to admit experiencing nausea. People break out in a cold sweat. Fatigue and often drowsiness occur in minutes. Attention, reflexes, and concentration wane.

While all this is going on, the stomach develops abnormal electrical activity, which prevents it from emptying and causes it to relax. The esophagus contracts, pulling the upper portion of the stomach from the abdomen, through the diaphragm, and into the chest, forming a kind of funnel from stomach to esophagus. Then, in a single movement, known as the "retrograde giant contraction," the upper small intestine evacuates its contents backward into the stomach in preparation for vomiting. In the lower small intestine, smaller rhythmic contractions push the contents into the colon.

As Fitzpatrick came off the exit ramp, the lanes opened out like a fan, and all the drivers around her jockeyed for position. She looked for a place to pull over on the right side of the road, but there wasn't any. She started to cut across the lanes to the left, aiming for a no-man's-land between the traffic going into the toll booths and the traffic coming out from the other direction. She began to retch, and she fished out an empty plastic grocery bag. Then she vomited. Some of the vomit hit the dress and jacket she wore. Some got into the bag she held with one hand. She kept her eyes open and kept the car steady, though, and made it out of the traffic. Then she braked to a halt, bent forward against her shoulder belt, and brought up whatever she had left.

The vomiting act itself has two phases. The retching phase involves a few rounds of coordinated contractions of the abdominal muscles, the diaphragm, and the muscles of respiratory inspiration. So far, nothing has come out. In the expulsive phase, the diaphragm and the abdomen undergo a massive, prolonged contraction, generating intense pressure in the stomach; when the esophagus relaxes, it's as if someone had taken the plug off a fire hydrant.

A Queasy Feeling

In the beginning, the nausea didn't seem anything to worry about. Amy Fitzpatrick was eight weeks pregnant—with twins, as an ultrasound had revealed—and, having watched her sister and her friends go through their pregnancies, she understood that nausea was simply part of the deal. Her first episode was certainly inconvenient, though. She was on New York City's F.D.R. Drive, piloting her Honda Civic to work through the frantic rush of morning traffic. Speeding along at fifty miles per hour, she realized that she was about to throw up.

Fitzpatrick was twenty-nine years old, tall, with long, thick black hair set against pale Irish skin and a dimpled, almost teenage face that sometimes made it hard for people to take her seriously, despite her Wharton M.B.A. She lived in Manhattan, where her husband was an investment banker, and she commuted to Manhasset, on Long Island, where she worked as a management consultant for the North Shore Health System. It was a brisk March morning, and she needed to find somewhere to pull over fast.

As she got off the F.D.R. onto the ramp to the Triborough Bridge, her head was swimming and her stomach was rolling. She was in what scientists call the "prodromal phase of emesis." Salivation increases, sometimes torrentially. The pupils dilate. The

Vomiting usually makes people feel better, at least for a little while, but Fitzpatrick didn't feel any better. She sat there with the cars rushing by, waiting for the sick feeling to pass, but it didn't. Eventually, still queasy, she drove over the bridge, turned the car around, went home, and climbed into bed. Over the next few days, she began to lose her appetite, and strong odors became intolerable. Easter came that weekend, and she and her husband, Bob, drove down to Alexandria, Virginia, to see her family. She was barely able to tolerate the ride, and had to spend it lying flat on the backseat. It would be months before she could make it back to New York.

At her parents' home, her symptoms rapidly escalated. That weekend, she was unable to hold down any food or liquid at all. She became thoroughly dehydrated. The Monday after Easter, she spent a few hours at the hospital and got replenished with intravenous fluid. She saw her mother's obstetrician, who reassured her that nausea and vomiting were normal during pregnancy, and gave her some common, practical advice: stay away from strong odors and cold liquids, and try to get down small amounts of food whenever possible—perhaps dry crackers and other carbohydrates. Since Fitzpatrick's symptoms were normal, the doctor didn't want to consider prescribing drugs. Pregnancy sickness, she pointed out, usually goes away by the fourteenth, at most the sixteenth, week of pregnancy.

Fitzpatrick was determined, but she found that she couldn't tolerate anything except a bite of cracker or toast. By the end of the week, she needed more hydration, and the doctor arranged for a visiting nurse to come to her parents' house and administer IV fluids. Fitzpatrick continually felt that she was on the verge of throwing up. She had been someone who could eat almost anything; now the smell of the blandest foods made her gag. She had always loved stomach-churning amusement park rides; now riding in a car or just standing up or tilting her head brought on severe motion sickness. She couldn't make it down the stairs. Even in bed, watching TV or focusing on a magazine made her head reel. Over the next couple of

weeks, she would vomit five or six times a day. She lost twelve pounds instead of gaining weight, as a woman bearing twins should have. The worst of it was the sense that she was losing control of her life. The management executive in her couldn't stand it. Here she was, back in the house she had grown up in. Her mother had to take a leave from teaching high school to care for her. She felt as if she were a helpless child.

What is nausea, this strange and awful beast? The subject gets little attention in medical school, and yet, after pain, nausea is the most frequent complaint for which people consult physicians. It is a typical side effect of drugs. Among surgery patients, vomiting after anesthesia is so common that an "emesis basin" is kept at the side of every bed in the recovery room. A majority of chemotherapy patients suffer nausea, and they consistently rank it as the worst part of the treatment. From 60 to 85 percent of pregnant women experience morning sickness or "pregnancy sickness," and a third of those who are employed miss work as a result of it. In about five in a thousand pregnant women, the condition is so severe as to cause substantial weight loss—a condition termed "hyperemesis of pregnancy." And, of course, motion sickness afflicts virtually all of us at some point in our lives. Seasickness has been a major military concern dating back to ancient Greece. (The word *nausea* comes from the Greek word for ship.) Cybersickness continues to hobble the development of virtual reality devices. And space sickness is a frequent, though rarely mentioned, problem for astronauts.

The most striking thing about nausea is that it is so intensely aversive (Cicero claimed he "would rather be killed than again suffer the tortures of seasickness"), and not just in the moment. Long after the pain of childbirth fades from memory, mothers will vividly recall their experience of nausea; it is even a reason that some women don't want to bear more children. Nausea is remarkable in this way. Break a leg on a ski slope and—as bad as traumatic pain can

be—once you can, you'll ski again. After one unfortunate experience with a bottle of gin or an oyster, by contrast, people won't go near the culprit for years. In Anthony Burgess's *A Clockwork Orange*, the authorities programmed Alex away from brutality by coupling his violent urges with feelings of nausea, not of pain. At one time, some German towns made similar efforts. An 1843 manuscript relates that delinquent juveniles used to be put inside a box outside town hall, whereupon a policeman spun the box around at high speed until the youths had provided the gathered crowd with a "disgusting spectacle."

The sheer loathsomeness of nausea and vomiting does seem to serve a biological purpose. The benefit of vomiting after eating something poisonous or tainted is obvious: the toxin is expelled. And the dreadfulness of the accompanying nausea deters you from ever wanting to eat anything like it again. This explains why pills, chemotherapy, and general anesthetics so often cause nausea and vomiting: they are poisons—albeit controlled ones—and the body is designed to reject them.

Why other things cause nausea and vomiting is more difficult to explain, but scientists are beginning to see some sense in nature's design. You'd think that pregnancy sickness, for example, would be evolutionarily disadvantageous, since a growing embryo needs nutrition. In a famous 1992 paper, however, the evolutionary biologist Margie Profet made a compelling case that pregnancy sickness is actually protective. She pointed out that natural foods that are safe for adults commonly turn out to be unsafe for embryos. All plants produce toxins, and in order to be able to eat them we have evolved elaborate detoxification systems. But these systems don't eliminate harmful chemicals completely, and embryos can be sensitive to even tiny amounts. (For example, toxins in potatoes have been found to cause neural malformations in animal fetuses, even at levels that are nontoxic to their mothers; indeed, Ireland's heavy potato consumption may account for its having the world's highest rate of neural defects, such as spina bifida.)

Pregnancy sickness, Profet suggested, may have evolved to reduce an embryo's exposure to natural toxins. She pointed out that women with pregnancy sickness strongly prefer bland foods that do not spoil easily (like breads and cereals) and are particularly averse to foods associated with high levels of natural toxins, such as bitter or pungent foods and animal products that are not extremely fresh. The theory also explains why sickness occurs mainly during the first trimester. That is when the embryo develops organs and is most sensitive to toxins; at the same time, it is small and its calorie needs are easily supplied by the mother's fat stores. Overall, women with moderate to severe morning sickness have a lower rate of miscarriages than women with mild nausea or none at all.

The purpose of motion sickness is harder to account for. In 1882, the Harvard psychologist William James observed that certain deaf people were immune to seasickness, and since then a great deal of attention has been focused on the role of the vestibular system—the inner ear components that enable us to track our position in space. Scientists came to believe that vigorous motion overstimulates this system, producing signals in the brain that trigger nausea and vomiting. But as Charles Oman, an M.I.T. aerospace physiologist, points out, this theory could not explain many characteristics of motion sickness: why activities like running, jumping, or dancing almost never produce sickness, whereas motion that isn't under your control—for example, being flung around the Gravitron at the county fair—does; why drivers of cars or pilots of aircraft are much less susceptible than passengers; and why sickness tends to diminish with experience. Motion sickness can occur without any motion at all—as with cybersickness or, a related phenomenon, "cinerama sickness," which comes from watching very wide-screen movies. Oman found that among the most provocative stimuli for space sickness in astronauts is simply seeing another astronaut float by upside down, which can produce a sudden, nauseating perception that you are the one who is upside down.

Researchers have now established that motion sickness occurs when there is a conflict between the motion we experience and the motion we expect to experience. Merely to balance our heads on our shoulders, our bodies on our hips and feet, we require an incredibly fine-tuned "body sense"—a system that learns to anticipate motion based on input from vision, muscles, and, especially, the inner ear. Nausea arises when the brain receives unanticipated sensory inputs—for someone new to boats, say, feeling the ground beneath him pitch up and down, or, for someone in a virtual-reality helmet, seeing oneself move through the world while one's body knows it is standing still. (Taking the wheel of a vehicle helps, because one can have more control and feel for how one is moving.) To put it simply, motion sickness is really sickness from unfamiliar motion.

But why does unfamiliar motion make us feel so miserable? A leading explanation returns to the notion of nausea and vomiting as something that protects against toxins. During the Pleistocene epoch, when our species evolved, people had no occasion to experience sustained passive motion, as they do today, on a boat or in a car. Much the same sensation can occur with the ingestion of many hallucinatory toxins, however—as anyone who has drunk too much alcohol can attest. So the nausea and vomiting that comes with motion sickness may be a modern by-product of our standard system for expelling poisons and nurturing avoidance of them. This theory is not nearly as well examined as the explanation for pregnancy sickness, however. And we still don't have a convincing explanation of why anxiety or the sight of blood or of vomit itself should make people sick.

However adaptive nausea and vomiting might be, in cases of hyperemesis like Amy Fitzpatrick's these reflexes seem to spin out of control. Indeed, prior to the Second World War and the development of modern techniques for replacing fluids, hyperemesis was routinely fatal unless the pregnancy was aborted. Even today, although death is rare, serious injury from the severe vomiting can

occur—including rupture of the esophagus, lung collapse, and tearing of the spleen. No one would suggest that Fitzpatrick's condition was in the least beneficial. Something had to be done to help her.

Once Fitzpatrick had lost twelve pounds, her doctor prescribed drugs in an effort to control the nausea and vomiting and allow her to eat and drink again. First, the doctor tried Reglan, a drug often used to treat nausea from general anesthesia. Fitzpatrick wore a device that pumped the drug into her leg around the clock. It didn't seem to help, though; instead, it produced frightening neurological side effects—tremors, lockjaw, body rigidity, and difficulty breathing. The doctor tried a second drug, Compazine, which didn't do much of anything, and then still another, Phenergan suppositories, which made her drowsy but didn't slow the vomiting.

All of those drugs work by blocking dopamine receptors in the brain. There is, however, a more recent class of antiemetics on the market today, serotonin-receptor blockers, and these have been hailed as a breakthrough in the treatment of nausea and vomiting. They aren't cheap—Zofran, the biggest seller, costs a hundred and twenty-five dollars a day or more—but studies show that they substantially reduce vomiting in chemotherapy patients and also in some surgery patients. Nor have any problems with birth defects been detected. So Fitzpatrick was given Zofran by vein for several weeks, but, once again, to no avail.

Her doctor also arranged for blood tests, ultrasounds, and consultations with numerous specialists. Nausea can signify an obstruction of the gastrointestinal tract, or a severe infection, or poisoning. But no alternative cause could be found.

"I know the doctors are trying their best," Fitzpatrick would say, and she tried her best, too. She just had to hang in there, she told herself, and, ever the M.B.A., she was organized about it. She arranged for a supply of plastic kidney-shaped emesis basins to be stationed at strategic points around the house, and for a suction apparatus with a

plastic nozzle to be kept at her bedside for vacuuming all the sickly saliva from her mouth. For the most part, though, when she wasn't bent over vomiting, she just lay in bed with her eyes closed.

Meanwhile, a small committee of family and friends systematically gathered information on treatment options, both conventional and otherwise. At various points, Fitzpatrick tried herbal therapy, Chinese massage, and water with lemon in it. She tried ginger after she learned about a study showing that it might be effective for her condition. She tried Sea-Bands, which are acupressure wristbands that apply constant pressure at the "Neiguan point"—a spot on the inside of each forearm situated three finger-widths down from the wrist crease, between the tendons. (Though acupressure has been touted for nausea resulting from pregnancy, chemotherapy, and motion, studies have not revealed any consistent effect.) None of it reduced Fitzpatrick's nausea, although she did enjoy the massages.

Even more disturbing, the symptoms weren't getting better with time, as her doctors had expected. By the fourth month of pregnancy, she was as nauseated as she had ever been—an exceedingly unusual occurrence. She looked frighteningly ill. Her weight was down sixteen pounds. Her doctor admitted her to the George Washington University Hospital and had her seen by the high-risk obstetrics service. She was put on intravenous nutrition and she finally started gaining weight. During the next few months, however, she spent more time in the hospital than out.

To her doctors, she was now a spectral, ever-present reminder of failure—the kind of patient whose very existence is a reproach to them and their expertise. Doctors have several ways of dealing with these patients, and in the course of events she must have seen all of them. Some doctors kept telling her that in another week or two she'd turn the corner. One doctor asked if she wanted to go back to New York, and she got the distinct impression that he just wanted to get rid of her. Another seemed to believe that she wasn't trying hard enough to eat, as if the nausea were under her control. Their frustration was palpable. Later, they suggested that she see a psychiatrist.

This was not an unreasonable suggestion. Anxiety and stress can influence nausea, and she was willing to try anything that might help. But Fitzpatrick says that the psychiatrist who saw her kept focusing on whether she was angry at the babies and unable to accept her roles as wife and mother. A surprising number of doctors still believe in the discredited Freudian theory that hyperemesis is due to an unconscious rejection of pregnancy.

The situation had moved beyond the doctors' control and, worse, their understanding. Naturally, Fitzpatrick sought to gain a measure of control herself. At one point, she and her family pushed her team to try a treatment they had come across in an article about Maria Shriver's experience with hyperemesis. The treatment involved a continuous infusion of droperidol, a tranquilizer that is often used to reduce nausea and vomiting in surgery patients. The doctors agreed to try it. During the infusion, however, Fitzpatrick's condition actually worsened. She started throwing up every ten minutes, developed small tears in her esophagus, and began bringing up blood by the cupful.

Her suffering was bottomless. It is not uncommon in hyperemesis cases for women to abort the pregnancy because of the unrelieved misery. A woman across the hall from her did abort because of hyperemesis, and the doctors proposed the same option for Fitzpatrick. She did not consider it, partly because she was an observant Catholic and partly because each day the nurse came by with a small ultrasound device that allowed her to hear the two tiny hearts fluttering inside her womb. Somehow, that was enough to keep her going.

There is no universal antiemetic. Skin patches containing the drug scopolamine reduce motion sickness and postoperative vomiting but seem to do little for pregnant women or chemotherapy patients. The dopamine-receptor antagonist Phenergan works well for many pregnant women and motion-sickness sufferers but not for chemotherapy patients. Even a cutting-edge drug like Zofran, which is often seen as a kind of penicillin for nausea, frequently doesn't

help. While Zofran can be highly effective against vomiting from chemotherapy and anesthesia, studies show that it doesn't help with motion sickness or hyperemesis of pregnancy. (Smoking marijuana, by the way, appears to be effective for chemotherapy patients, if only weakly, but in pregnancy it is as toxic for the fetus as tobacco is.)

This makes sense when you recall that nausea is a condition that can be triggered by stimuli as different as an unfamiliar motion, a bad smell, a toxic drug, and the hormonal fluctuations of pregnancy. As scientists explain it, the brain has a vomiting program (or "module") that receives and responds to all kinds of inputs: from chemoreceptors in the nose, the gut, and the brain; from receptors that detect overfilling of the stomach or tickling of the uvula; from motion sensors in the inner ear; and from higher brain centers governing memory, mood, and cognition. Each of our current drugs presumably interferes with some pathways more than with others. Hence the different effects in different conditions.

What's more, although we often think of nausea and vomiting as part of the same phenomenon, they are quite separate, probably involving separate programs in the brain, and a drug that affects one may not affect the other. Vomiting does not always involve nausea. I can remember a kid in sixth grade who could vomit at will — no finger down the throat or anything — even though he didn't feel the least bit sick. And people with the rare condition known as rumination syndrome have an unexplained tendency to vomit food up from their stomach into their mouth shortly after every meal — this without any associated nausea. (They either swallow the food again or spit it out, "depending on social circumstances," as one scientific article put it.) Conversely, even severe nausea does not necessarily produce vomiting. And drugs that stop vomiting do not necessarily stop nausea — a point that many doctors and nurses often fail to recognize. For example, people working in medicine have been highly impressed by Zofran, but patients may be less so. A study led by Gary Morrow, a nausea researcher at the University of Rochester Medical School, found that widespread use of Zofran and its cousins had

reduced vomiting in chemotherapy patients but had produced no improvement in the severity of their nausea. In fact, patients today report having a longer duration of nausea than patients had during the pre-Zofran years.

Researchers studying chemotherapy patients — a sort of captive population for scientists investigating how nausea and vomiting occur — have discovered something even more surprising. These patients actually experience three separate types of nausea and vomiting. An "acute" type occurs within minutes to hours of receiving a dose of a toxic chemotherapy drug and then gradually resolves — exactly the effect we'd predict from a poison. But then in many patients the nausea and vomiting come back after a day or two, an effect called "delayed emesis." And about a quarter of chemotherapy patients even begin to have "anticipatory nausea and vomiting," symptoms that occur before the drugs are injected. Morrow has documented some striking characteristics of these types of nausea. The more intense the initial acute nausea, the worse the anticipatory nausea becomes. And the more cycles of chemotherapy that patients receive, the more general the cues for anticipatory nausea become: vomiting may occur first when a patient sees the nurse who administers the drugs, then when he sees any nurse or takes in the smell of the clinic, then when he pulls into the clinic parking lot for his chemotherapy appointment. Morrow had one patient who vomited whenever she saw the highway exit sign for the hospital.

These reactions are, of course, familiar results of psychological conditioning — the "Clockwork Orange" effect in action. Such conditioning probably plays an important role in prolonging nausea in other circumstances, including pregnancy. Once delayed or anticipatory vomiting develops, though, current drugs don't help. Studies by Morrow and others have found that only behavioral treatments, like hypnosis or deep relaxation techniques, significantly reduce conditioned vomiting, and then only for some patients.

Ultimately, our medical arsenal against nausea and vomiting is still fairly primitive. Given how common these problems are and

how much people are willing to pay to make them go away, pharmaceutical companies are investing millions of dollars in efforts to find more effective drugs. Merck, for example, has developed a promising contender, currently known as MK-869. This is one of a new class of agents called "substance P antagonists." These drugs attracted a good deal of attention when Merck announced that they seemed to be clinically effective against depression. Less noted, however, were findings published in the *New England Journal of Medicine* that MK-869 was remarkably effective against nausea and vomiting in chemotherapy patients.

The findings were unusual for two reasons. First, the drug substantially reduced both acute and delayed vomiting. Second, MK-869 didn't just work against vomiting but reduced nausea as well. The proportion of patients reporting anything more than minimal nausea in the five days following chemotherapy dropped from 75 percent to 51 percent with the drug.

All our medications have their limitations, however, and as promising as such new drugs may seem they will fail many patients. Not even MK-869 could stop nausea for half of the chemotherapy patients. (In addition, its safety and effectiveness in pregnant women are likely to remain unknown for some time. Because of both medical and legal hazards, drug companies generally avoid testing drugs on pregnant women.) So there's no morphine for nausea on the horizon. Uncontrolled nausea remains a persistent problem. Still, a brand-new clinical specialty called "palliative medicine" is pursuing a radical project: the scientific study of suffering. And what's striking is that they're finding solutions where others have not.

Palliative specialists are experts in the care of dying patients—specifically in improving the quality of their lives rather than prolonging their lives. One might think we wouldn't need a specialty for this, but there's evidence that these specialists really are better at it. Dying patients often have pain. Many have nausea. Some have such poor lung function that, although they take in enough oxygen to sur-

vive, they live with a constant, terrifying breathlessness—a feeling that they are drowning and just cannot get enough air. These are patients with untreatable disease, and yet palliative specialists have been remarkably successful at helping them. The key is simply that they take suffering seriously, as a problem in itself. In medicine, we're used to seeing such symptoms only as clues in a puzzle about where the disease is and what we can do about it. And, as a rule, fixing what's physically wrong—taking out the infected appendix, setting the broken bone, treating the pneumonia—is precisely the way to relieve suffering. (I wouldn't be a surgeon if I thought otherwise.) But not always—and nowhere is this more apparent than with nausea. Most of the time, nausea is not a sign of pathology but a normal response to something like travel or pregnancy—or even to a beneficial treatment like chemotherapy or antibiotics or general anesthesia. The patient, we say, is "fine," but the suffering is no less.

Consider the significance of vital signs. When a patient is in the hospital, every four hours or so a nurse records the vital signs on a bedside chart to provide caregivers with a measure of how the patient is doing over time. This is done the same way the world over. By convention, the four vital signs are temperature, blood pressure, pulse, and respiratory rate. And these do tell us a lot about whether someone is getting physically better or worse. But they don't tell us anything about suffering, about something more than just how the body is doing. Palliative specialists are trying to change this. They want to make pain—the level of discomfort a patient reports—the fifth vital sign. The fuss they've raised is forcing physicians to recognize how often we undertreat pain. And they are developing better treatment strategies generally. For example, it is now evident that, once symptoms of severe nausea (or, for that matter, pain) develop and progress, they become increasingly resistant to therapies of any kind. The best approach, palliative specialists have learned, is to start treatment when the symptoms are mild—or, in some circumstances, even before they appear—and that proves true whether you're a passenger about to board a ship or a cancer patient about to start

chemotherapy. (The American Society of Clinical Oncology has announced guidelines endorsing this preventive approach for chemotherapy patients.) Back when doctors didn't hesitate to prescribe antiemetics for ordinary pregnancy sickness—at least a third of pregnant women were on such drugs in the 1960s and 1970s—hyperemesis was much less common. But doctors changed this practice after lawsuits forced the popular remedy Bendectin off the market alleging it caused birth defects (despite numerous studies showing no evidence of harm). It became standard to avoid prescribing drugs until, as in Fitzpatrick's case, vomiting had already caused significant dehydration or starvation. Hospital admissions for hyperemesis of pregnancy subsequently doubled.

Perhaps the most striking observation palliative specialists make, however, is that there is a distinction between symptom and suffering. As the physician Eric J. Cassell points out in his book *The Nature of Suffering and the Goals of Medicine*, for some patients simply receiving a measure of understanding—of knowing what the source of the misery is, seeing its meaning in a different way, or just coming to accept that we cannot always tame nature—can be enough to control their suffering. A doctor can still help, even when medications have failed.

Amy Fitzpatrick said that the doctors she liked best were the few who admitted they didn't know how to explain her nausea or what to do about it. They would say that they had never seen anything like her case, and she could tell that they commiserated with her. She did acknowledge having some contradictory feelings about such admissions. At times, they made her wonder if she had the right doctors, if, somehow, they were missing something. But, for all the treatments she and the doctors tried, the nausea would not let up. It really did seem beyond anyone's comprehension.

The first months were a terrible, frightening struggle. Gradually, though, she felt a transformation, a toughening of her spirit, and she sometimes even had a thought that things were not so bad after all. She prayed every day and believed that the two children growing

inside her were a gift from God, and, with time, she came to see her trials as simply the price she had to pay for this remarkable joy. She gave up looking for silver bullets. After the twenty-sixth week of pregnancy, she asked for no more experimental therapies. The nausea and the vomiting persisted, but she would not be defeated by them.

Eventually, there was a glimmer of relief. By the thirtieth week, she found that she could eat an odd selection of four things in silver-size portions: steak, asparagus, tuna, and mint ice cream. And she was able to hold down a protein drink. The nausea remained, but it had eased just a bit. In the thirty-third week, seven weeks early, Fitzpatrick went into active labor. Her husband flew down on the shuttle from LaGuardia in time for the delivery. The doctors warned her that the twins would be small, around three pounds, but on September 12, at 10:52 P.M., Linda was born, weighing four pounds twelve ounces, and at 10:57 P.M. Jack was born, at five pounds even—both in excellent health.

Shortly after delivery, Fitzpatrick threw up once more. "But that was the last time," she recalled. The next morning, she drank a big glass of orange juice. And that night she ate a giant hamburger with blue cheese and fries. "It was delicious," she said.