

DEEP DIVE

# How ‘shock therapy’ is saving some children with autism

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*Illustration by Pep Boatella*

For a boy who needs routine, this day is off to a bad start. It's early, just before 8 a.m., and unseasonably warm for June. Kyle, 17, has been up since 6:20 a.m., which isn't all that unusual. But already, enough has happened to throw him off balance. His mother has driven him to Johns Hopkins University in Baltimore, as she does every week. But today she is wearing makeup and fancy clothes rather than her usual exercise gear. When they get to the hospital, the hallway is not empty as it usually is, and his mother walks away from him to talk to someone else.

Kyle starts to bounce on the balls of his feet. Just a small bounce at first, but higher and faster and louder as the minutes pass. He twirls the long shoelace of his toy, a tiny teal Converse sneaker speckled with white stars. When his mother comes back to check on him, he's too agitated to even look at her. He walks away, turns his head and nips at the underside of his upper arm, then bounces some more, winding and unwinding the lace. He jiggles the handle of a door labeled 'ECT Suite,' trying to get in, but it's locked.

Finally, it's time. Melinda Walker, the nurse he adores, comes out of the room and gives him a hug. After a brief conversation with him, she says softly, "Come on in, Kyle."

And with that, Kyle's routine is restored. He goes into the room holding Walker's arm. Once the door shuts, he slips off his soft, gray shoes, as he always does, and hands his glasses to his mother. He lies down on the bed. Walker kneels by his feet, holding his hand. His mother stands behind his head, covers his eyes and whispers, "It's okay, it's okay," over and over, as an anesthesiologist Kyle knows inserts an intravenous line into his right arm. Kyle's left hand clutches his sneaker. Another nurse places an oxygen mask on his face.

Once Kyle is under, his mother leaves the room. A psychiatry resident places electrodes on Kyle's temples and a brown bite block in his mouth to protect his tongue. A nurse compresses a green bag, sending oxygen into Kyle's lungs and pushing carbon dioxide out — essentially

hyperventilating him to lower his seizure threshold. Then, **Irving Reti**, the chief psychiatrist in the room, presses an orange button on a small machine in the corner, sending an electric pulse of 800 milliamps at a frequency of 30 hertz into Kyle's brain for eight seconds. A few seconds later, Kyle's chin clenches, his lips quiver, and his index finger starts to vibrate. A minute in, the nurse suctions some fluids out of Kyle's mouth. Exactly 107 seconds after it began, the seizure is over.

## The way we live now:

As medical procedures go, electroconvulsive therapy (ECT) is underwhelming. Kyle's entire session, from when he lay down on the bed to when he woke up and was taken to the recovery room, lasted about 15 minutes. While the seizure lasted, he was under the effect of anesthetics and a muscle relaxant — not awake, aware or thrashing around in pain, as the movies would have you believe. In fact, the version of ECT shown to powerful effect in the 1975 film "One Flew Over the Cuckoo's Nest" hasn't been practiced in the United States or most other countries since the 1950s. Still, it's what comes to mind when most people think about ECT.

While public perception remains stuck in the past, hundreds of psychiatrists worldwide employ the treatment, most often for bipolar disorder or depression that hasn't responded to anything else. "[ECT] is practiced at every large psychiatric medical center in the United States and most around the world," says **Charles Kellner**, director of the ECT service at Mount Sinai Hospital in New York. An estimated 100,000 people in the U.S. and more than a million people worldwide receive ECT each year, he says. "Overall in history, millions and millions of people have benefited from it."

There are lingering concerns about the therapy's side effects — its ability to produce short- and long-term memory loss, in particular. But ECT's champions say that in cases where people are depressed enough to be suicidal or otherwise desperately ill, the benefits far outweigh the risks.

In the past few years, some psychiatrists have stumbled upon a new purpose for the therapy: calming the brains of children with autism who, like Kyle, would otherwise pinch, bite, hit and harm themselves, perhaps fatally. The numbers are small, no more than 50 children treated in the U.S. in any given year, although no one knows the exact figure. But for this group of children, who are driven by uncontrollable, unrelenting impulses to hurt themselves, ECT grants a reprieve. "For some of these children who have tried every other treatment modality," says Kellner, "ECT can be dramatically helpful and sometimes life-saving."

"Well, what is the alternative in my son's case? He'd be dead right now; he'd be in a coma

right now.” Alison

## Hard times:

There was a time when Kyle’s mother, Alison, thought he would not live to adulthood.

Kyle was diagnosed with autism when he was just 15 months old. His identical twin, Jake, also has autism, but as their older sister, Callie, likes to say, “Jake has a little bit of autism and Kyle has a lot.”

When he was around 8, Kyle began hurting himself. It was never clear to his parents what the trigger was, but it seemed to happen hundreds of times a day, without a clear cause or conclusion, and sent him into paroxysms of crying. Videos of Kyle from that time are difficult to watch. They show a boy who seems compelled by forces he cannot control to smack his face, rapidly and repeatedly, turning his cheek a deep crimson. (Alison says, in a tone that suggests she’s still coming to terms with it, that he sometimes hit himself more than 100 times an hour.) Kyle also tore up his arms with his teeth, dented the wall and pounded the concrete floor with his head, and pinched his thighs and abdomen hard enough to draw blood.

Kyle was lucky enough to find a spot in a private school with an autism program, but “he was always unhappy and never, ever available to learn anything,” says Alison. “He’d go to school and all they’d basically do is make sure he didn’t hit himself.”

At the time, Kyle weighed only about 35 pounds, a weight low enough to be categorized as ‘failure to thrive.’ Desperate for help, his parents spent hundreds of thousands of dollars on a laundry list of therapies, from reputable behavioral interventions to quack treatments they read about on the internet. “We did just about everything you could possibly do. We flew all over the country for doctors that specialize in autism and other things,” says Alison. None of it helped.

When Kyle was 11, he was admitted to the Neurobehavioral Unit at the Kennedy Krieger Institute in Baltimore, a long-term in-patient facility for children with intractable behavioral problems. He was at the unit for nine months, but the doctors there had no success. When he was discharged, he had a floor mat to cushion the blows when he hammered his head on the ground, splints on his arms to prevent him from hitting his face, and thick tights to protect his thighs and abdomen from his pinching.

The gear created its own problems. Kyle is nonverbal and communicates using sign language, but the arm splints made that difficult to do. The splints, the socks he had to wear underneath and the tights all had to be removed, and his limbs rubbed, every two to three hours to restore his circulation and prevent sores and swelling. Worst of all, none of it eased the misery that compelled him to hurt himself in the first place.

It was around then that Alison, a yoga teacher, struck up a rare personal conversation about her son's troubles with a client. As it turned out, the client knew of a solution that she had heard did wonders for children like Kyle: ECT.

Alison is still angry that not a single doctor she met had brought up ECT to her as an option for Kyle. Even after she heard about it and discussed it with **Lee Wachtel**, medical director of the Neurobehavioral Unit, there was no easy path to ECT. Wachtel referred the family to Kellner, whose office in Manhattan was a full four-and-a-half-hour drive from their home in suburban Maryland. Kyle needed three treatments a week — typical for ECT's acute phase — for the first few months, followed by maintenance therapy every 7 to 10 days.

Undaunted, Alison put in place an exhausting schedule of long-distance drives and handoffs of the other two children with her husband twice, sometimes three times, a week. She kept this up for 17 months. Wachtel then connected her to a psychiatrist in Philadelphia. His clinic was closer, two and a half hours away. Alison and Kyle made this drive to Philadelphia once a week for two and a half years before Johns Hopkins' Reti agreed to treat Kyle. Their trip now is an easy hour each way.

**Gentle soul:** Kyle, 17, used to hit, pinch and bite himself hundreds of times a day.

Photography by T.J. Kirkpatrick / Redux Pictures for Spectrum

Altogether, Kyle has been receiving ECT for about five years. In that time, Alison says, she has worn down three cars and years off her life. From her perspective, every minute has been worth it.

"Once Kyle's treatment started, a whole new person emerged," she says. "As time went on, he just kept on getting better and better." He has learned to sign new words. He is a healthy 145 pounds for his 5-foot-8-inch height. At school, he delivers mail and newspapers to the staff, and helps with the recycling. He has done so well, in fact, that his teachers are starting him on a four-hour shift maintaining an off-site park once a week. He goes hiking, bowling, swimming or simply to a restaurant with his family. In May, he was invited to attend a school dance for the first time ever. And he hurts himself just a few times a day, if at all. He's at his best the first few days after a treatment: calm, present and interactive. "I think that's huge, because people think you're going to get a zombie [after ECT], and you don't," says Alison. But as the days go on, the treatment's effects seem to wear off, and he becomes increasingly agitated — until his next session.

It's entirely possible that Kyle will need to keep this up for the rest of his life — and Alison is more than okay with that. "Well, what is the alternative in my son's case?" she asks. Without ECT, she

says, “he’d be dead right now; he’d be in a coma right now; he’d have a detached retina right now. So in my opinion, having him alive and enjoying his life is way better than anything anybody else can say.”

## A bend in the river:

The version of ECT that debuted in 1937 is every bit deserving of its shocking reputation. Although the idea of inducing seizures, rather than treating them, seems odd and counterintuitive, a Hungarian psychiatrist called Ladislas Joseph von Meduna hit upon it as a possible treatment for schizophrenia. Beginning in January 1934, von Meduna first used camphor and then a drug called metrazol to induce seizures in people with schizophrenia. His remarkable success — he claimed that 95 percent of individuals with acute schizophrenia recovered — inspired Italian researchers Ugo Cerletti and Lucio Bini three years later to pursue electric shock as a safer and more effective way to induce seizures.

In those early years, the patients were neither anesthetized nor sedated and their *grand mal* seizures sometimes broke their bones. But by the mid-1950s, the routine use of general anesthesia and muscle relaxants had made ECT much safer. And by the 1970s, doctors began triggering the seizure with a brief square-wave electric pulse rather than the harsher sine wave currents that emerge from an electrical socket.

At the same time, antipathy to ECT rose apace. During World War II, many psychiatrists in the U.S. were acolytes of Sigmund Freud and held up psychotherapy and psychoanalysis as the gold standard treatments for psychiatric illness. They published statements opposing ECT, which they said damages the brain. Among the general public, there were waves of protest against ECT in general and its use in children in particular. “It just became inconceivable that one would pump electricity into the developing child’s brain,” says **Edward Shorter**, Jason A. Hannah Professor of the History of Medicine at the University of Toronto. “ECT in children became very badly stigmatized.”

Part of ECT’s image problem is that nobody knows how it works: The idea that shocking the brain would somehow restore its health seems so profoundly paradoxical as to be disturbing. The stigma against it only intensified with “One Flew Over the Cuckoo’s Nest.” The scene in which Jack Nicholson is forcibly held down and zapped with electricity as he screams became etched in the minds of everyone who saw it. ECT became second only to abortion in its vilified public image.

At least partly in response, several states enacted laws around the procedure — mandating the consent of two psychiatrists, or forbidding it altogether in children under 14 or 16. “As though it was the role of the state legislators to practice medicine and to protect the children from psychiatrists,”

says Shorter.

In the late 1990s, after the hubbub over antidepressants had subsided, there was a resurgence in interest in ECT to treat severe depression and other conditions. But the damage to its reputation had endured. It wasn't until 2008 that Wachtel, along with Reti and others, reported that **ECT can treat self-injury** associated with autism. The case study describes a young woman called "J" who had autism and 'psychomotor retardation,' meaning she was slow-moving — "except that sometimes she would pound herself into oblivion," says Wachtel.

J's slow movements were the manifestation of catatonia, which can overlie many conditions across the psychiatric spectrum, from deep depression to tic disorders such as Tourette syndrome. But the classic idea of a mute, motionless person is just one side of catatonia; the flip side is 'psychomotor agitation' — repetitive, uncontrolled and purposeless movements, as if driven by a motor gone awry.

What Wachtel and other experts say now is that the self-injury seen in some people with autism is an expression of catatonia's agitated side. (Some children can show both aspects of catatonia at once: In one video of Kyle, one of his arms is wooden like a tree branch, and the other is repeatedly whacking his head.)

The experts owe this theory to Max Fink, a psychiatrist who has, formally or informally, served as a mentor to most of them. Fink, 93, lives in Nissequogue, New York, in a rambling old house by the water, with exactly the kind of ornate rugs and book-lined shelves you would expect to see in a learned psychiatrist's home. Over the course of an hours-long conversation, Fink details the long and troubled history of ECT, replete with dates, occasionally shuffling in his bent gait to his formidable library to bring out a relevant manuscript or a book.

**Better days:** Kyle's mother, Alison, says ECT has been enormously beneficial for him.

Fink is the world's leading expert on catatonia and ECT, and many of his ideas have become mainstream. Psychiatric diagnostic manuals now describe both kinds of catatonia, as well as the idea that catatonia can accompany any number of other conditions. Case studies suggest that both sides of catatonia are exquisitely responsive to ECT. If the therapy — which Fink prefers to call "induced seizures" — helps some children with autism, he says, it's because it relieves their catatonic self-injurious behaviors.

One of Fink's protégées, a Belgian researcher called **Dirk Dhossche**, deserves the credit for solidifying this link between autism and catatonia. Dhossche trained with Fink at Stony Brook University in the 1990s. "At that time, there was very little talk about catatonia in children; we didn't even talk about autism much, for that matter," recalls Dhossche. When working in the Netherlands, he had seen two adolescents, one with autism and the other with Prader-Willi syndrome, an autism-related condition. Both boys had catatonia and responded to lorazepam — a benzodiazepine that is the standard first-line therapy for catatonia. (In fact, 'the lorazepam challenge test,' or response to the drug, has come to be known as proof of catatonia.) Dhossche set out to search the literature for more reports of children with catatonia and found about 30.

In 2001, Dhossche moved to the University of Mississippi, where he is now medical director of the child psychiatry inpatient unit. Shortly after his move, he saw a 9-year-old boy who had for months stayed mute and bedridden, and was not eating or drinking — all criteria for catatonia. After exhausting various treatment options, including benzodiazepines, Dhossche suggested using ECT. The response was nothing short of "spectacular," Dhossche says. "This boy started speaking again, eating again, walking again."

Even though the boy didn't have autism, some of his characteristics even prior to the catatonia reminded Dhossche of autism. "This was my first realization that actually, autism and catatonia, they seem to overlap at some point," he says. Repetition is a hallmark of catatonia; by that token, the echolalic speech and **repetitive movements** — including self-injurious behavior — characteristic of autism could be seen as catatonic. Dhossche's publications on this topic prompted Wachtel to contact him, and eventually led to the 2008 case report. Since that success, Wachtel has referred about 20 children with autism who seemed to meet the criteria for catatonia to clinics that offer ECT, including the one at Johns Hopkins. Like Kyle, these children were a danger to themselves. Like him, they are doing well, some still receiving ECT as maintenance therapy, others on lithium or antipsychotic drugs to keep their self-injury in check.

"The reward of diagnosing catatonia is that it's treatable," says Dhossche. "Not with the easiest type of treatment, not the most popular one, but that's just unfortunate at this point."

Because of his publications on the topic, parents come to Dhossche from as far away as California or Texas — two states that have banned ECT in children under a certain age. But the numbers are still vanishingly small. In total, he says, he has treated perhaps 10 children with autism.

One thing Dhossche has noticed among the children he has treated is that the catatonia seems to appear after a stressful event of some sort. One 14-year-old boy with autism from Texas, for example, developed unusual finger movements and grimacing expressions after a particularly severe episode of bullying at his school. "It often starts with an incident, with an event, and then it gets worse," says Dhossche.

## Things fall apart:

Doug DiPrisco was diagnosed with autism in 1993, when he was 3. He had some speech, reading and math abilities, and could do many things for himself. But in November 2009, his parents went to Europe without him to visit his brother, Greg, at college. In retrospect, they suspect Doug thought they were never coming back, perhaps creating the traumatic trigger Dhossche describes. Doug became catatonic — moving slowly and barely talking — although his parents wouldn't know to call it that for a while.

By 2011, the catatonia was much worse, recalls Lori DiPrisco, Doug's mother. "Every day was torture, from the minute he woke up until the minute he went to bed at night." Any change from one position to another — getting out of the car, for instance — would take Doug ages. He would pose — the official term is 'posturing' — in strange ways, standing for 20 minutes like an airplane poised to fly, for example. He stopped talking, wasn't eating or drinking and lost 18 pounds in two months. He had been toilet-trained since age 3, so when he began wetting himself, it pushed his parents to take him to the emergency room. The doctors there had no answers, but by chance, they gave Doug lorazepam to keep him still for the CT scan.

"When they gave him that injection, it was like a miracle, he stopped all the [unusual] movements," recalls Dom DiPrisco, Doug's father. That little tidbit became important later on when, after many futile visits to other psychiatrists, Doug's parents took him to see Wachtel. Even before the visit, Wachtel suspected that Doug had catatonia after seeing his home videos. In one, Doug tries to eat, but his arm meanders to somewhere near his mouth and then flails about without making contact, all with excruciating slowness — as if he is moving through molasses or performing an extreme version of tai chi. Wachtel told the DiPriscos about the lorazepam challenge, and about catatonia. She prescribed the drug for him again. He responded well, as he had before, but like most people, became tolerant to the drug. Over the next few years, he reached 19 milligrams a day, close to the maximum dose Wachtel was comfortable prescribing.

The first time Wachtel broached the possibility of ECT, Doug's parents were horrified. "We said no way, we're not doing that," recalls Dom DiPrisco. "It's not marketed well, let's say that."

"We didn't know what it would do to [Doug's] brain," he adds. "Would it create many more problems than he has?"

Then, last year, Doug seemed to stop responding to the highest dose of lorazepam. One horrible day in November, Lori DiPrisco says, it took Doug about an hour and a half to walk from the kitchen counter to the dining table. His parents began considering ECT. His mother read "**Each Day I Like It Better**," a book by writer Amy Lutz about the remarkable response her son with autism had to the therapy. Parents and psychiatrists praise the book as the definitive introduction to the topic. It convinced the DiPriscos to give it a try.

Doug had seven ECT sessions over three weeks at NewYork-Presbyterian/Columbia University Medical Center, but his parents did not like the way Doug was treated there. They halted Doug's therapy. In March, they began anew at Long Island Jewish Medical Center. "It was like going from the worst-case scenario to the best-case scenario," says Dom DiPrisco. Doug was calm, happy, talking. The posturing became almost unnoticeable. Doug now gets ECT every two weeks, and lithium in between. And he is back to being able to eat, talk and be his cheerful self.

"ECT can be dramatically helpful and sometimes life-saving." Charles Kellner

## In search of lost time:

Most people, including mental health professionals, would not have connected either Kyle's self-injury or Doug's classic catatonia with ECT. Psychiatrists who administer the therapy typically work with older people who are severely depressed. In the past few years, psychiatrists' interest in the approach has been rising. Wachtel and others have regularly led well-attended sessions on ECT at psychiatric conferences for the past six years. Still, for many doctors, the stigma around the therapy is a tough mental hurdle to overcome — especially when it comes to children, and even more so those with developmental disabilities. "It recalls connotations of torture and I guess brain injury," says Dhossche. "But in all the cases that we've treated, we've never seen it."

One of the major side effects reported for ECT is memory loss. But psychiatrists and families who have experience with the therapy say the memory loss, when it occurs, is minor and reversible. Even in the rare cases where it is significant, they say, it is infinitely better than the alternative.

"I have one patient who has had over 700 ECT [sessions] over the past eight years, maybe. If you ask him now what he had for breakfast, he cannot tell you," says Wachtel. "But on the other hand, without ECT he would try to remove his eyeballs from his head."

Still, no one knows whether and how much of an issue memory loss might be for children with autism who might receive maintenance therapy for years. Reti has published two case studies of individuals with autism or intellectual disability who have been treated with ECT for years, showing that cognitive testing did not show any memory loss or other damage. But those data are limited, says **Matthew Siegel**, director of the Autism & Developmental Disorders Inpatient Research Collaborative in Maine. "I think it speaks to the need to do a rigorous study of this," Siegel says. "Getting that kind of study funded by the federal government would be a challenge, but it's necessary."

Even for psychiatrists who are convinced that **ECT's benefits outweigh its risks**, setting up a practice is no easy task. "There is resistance at every level — within the institution, outside of the

institution, from colleagues, from other professionals,” says **Neera Ghaziuddin**, associate professor of psychiatry at the University of Michigan in Ann Arbor. “They have some very exaggerated and dramatic idea of what might be going on in the treatment.”

**Sunny outlook:** Kyle now goes hiking, bowling and swimming, but the park is his favorite destination.

Public reactions are worse still. There are demonstrations against ECT at meetings of the American Psychiatric Association and an online **“Hall of Shame”** listing practitioners’ names (rumored to be set up by the Church of Scientology, which openly **opposes ECT**). Articles in the media inevitably provoke intense vitriol from commenters. “It’s just unbelievable, the amount of hate that’s out there on the internet,” says Kellner, who has borne more than his **share of nasty comments**.

Families are only too familiar with the unforgiving censure of the internet. Alison asked that her last name not be published because the comments on a prior article left her feeling attacked and unsafe. But she and other parents are adamant that people should not judge them for their choices.

“They have no idea what it’s like to have a child like mine and have lived through that and think about the alternatives, which would be institutionalization, coma or death,” Alison says. “Those were our three choices; we had no other choices.” The DiPriscos echo that sentiment: “I’d like them to spend a day with Douglas the way he was before,” says Dom DiPrisco. “It was no quality of life at all.”

Many **people with autism may hurt themselves**, but often they are acting out for a particular goal. For example, a child might have learned that if he punches himself in the face, his mother will stop insisting that he finish his schoolwork, and offer him a treat or a hug instead. But self-injury in children like Kyle is usually not intentional. “There’s nothing manipulative about it, there’s nothing deliberate about it,” says Reti.

Behavioral therapists spend a great deal of time making sure that a child’s self-injury has no purpose. Even then, most children receive behavioral therapy and try at least two drugs before a practitioner will mention ECT. There may be some fallout from waiting so long. Ghaziuddin says that when she first started offering ECT for young people, “we were treating people who had failed everything.” But the longer someone is sick, the less likely that they will recover fully, she says, so she now recommends ECT sooner than she used to.

In a way, the number of deterrents for ECT may be a good thing. “It’s a problem for the kids who need it, but it’s good in only one way, which is that it causes people to really pause and consider if this is the appropriate treatment — so you don’t have ECT clinics opening on back roads like you have chelation clinics,” says Siegel.

Wachtel says there are fewer than 15 ECT clinics in the U.S. to which she would refer children on the spectrum. About half of the children with autism who receive ECT begin in Wachtel’s care. Kennedy Krieger does not offer ECT, so she refers them to clinics across the country. All of the clinicians know each other, and a phone call to one is quickly relayed to the others. They’re each careful to clarify, repeatedly, that ECT is in no way a treatment for autism per se, but rather for a specific set of self-injurious or catatonic behaviors that some children on the spectrum display. Kellner puts it bluntly: “This is not for kids with moderate autism who are talking but have difficulty socializing; this is for kids who are going to be dead if they’re not restrained.”

Some researchers are focused on learning more about how ECT works — and based on that, developing more palatable alternatives. What scientists know so far is that in the long term, ECT stimulates the birth and growth of neurons. In the short term, it floods the brain with **neurotransmitters** — in particular, GABA, the chemical messenger that tamps down brain activity. This is the same effect that taking an antidepressant or benzodiazepine might have, but much more rapid and powerful. Perhaps, one theory goes, triggering a seizure forces the brain to release a torrent of GABA, which in turn calms other aberrant brain activity.

“If you take a benzodiazepine and imagine that as a drip of GABA, then ECT would be like turning the faucet on full force,” says Wachtel.

Reti has led about 10,000 ECT treatments over the past decade, although Kyle is one of only three children with autism he treats. He is trying to develop a stimulator that could be implanted in the brain and switched on as needed. For people like Kyle, who might need maintenance therapy for years, perhaps their lifetime, this would be a welcome alternative.

## The sun also rises:

It’s the evening before Kyle’s first ECT session in nine days. This week has been more challenging than usual, because Kyle was at a sleepaway camp for children with disabilities — a big break in his routine. Alison scheduled one session for the day before she dropped him off, and one for the day after she picked him up. Kyle is restless. He’s humming — the sound is more like gargling, really — and bouncing loudly, 1, 2, 19 times, as his mother makes him a turkey sandwich.

“Look at me,” she says. “It’s time to stop. I want you to go down and eat it.” Bounce, bounce,

bounce, bounce. “Get your water.” Bounce, bounce. “I love you.” Bounce, bounce, bounce.

Kyle goes downstairs with his aide, Brittany. The television is on, but he lies facedown on the couch, playing with another small sneaker, this one light gray with bright yellow smiley faces. When his mother comes downstairs, he gets up, signing that he wants to go out. He smacks himself, hard, on his left cheek, which is still a purplish brown — a permanent relic of his years of self-abuse, along with the keloids and scars on his limbs.

“Kyle, Kyle, Kyle,” Brittany says, moving to touch and calm him. She pours out a small plastic container of dry pasta and makes him count the penne: The tedium of the task is supposed to deter him from hitting himself. Kyle completes it, but a couple of minutes later, he hits himself again. Whack. Bounce, bounce, bounce. Whack, whack. Bounce, bounce, bounce, bounce, bounce. Whack, whack. Bounce. Whack. “He hasn’t been O-U-T in the C-A-R today, that’s why,” Alison says.

**All quiet:** Kyle still has his bad days, but now they’re temporary.

Eventually, Alison and Brittany get Kyle outside and into the car. He loves to go on drives, and the park is among his favorite destinations. Kyle swings for a long stretch, looking off into the distance, his adult-sized body incongruous in the little children’s section. When he stops swinging, he hits himself again. Whack, whack, whack.

Alison and Brittany are unfazed by his agitation. “I just know that when it’s been over a week [after ECT], when he’s not been in his regular environment, that this is to be expected. I don’t get discouraged because I know it’s not permanent,” Alison says. “[The ECT tomorrow] is going to make a big difference.”

The next morning, at Johns Hopkins, Kyle still seems agitated. But he doesn’t hit himself, only bounces restlessly in the hallway as he waits for his session to start. Once the seizure ends and the oxygen mask is off his face, a nurse takes him to the recovery room, where he dozes for half an hour. As he stirs, Alison stands by his side, whispering, “Mommy’s here.” She hands him his glasses. Nurse Walker helps Kyle sit up. She flaps the back of his sweat-soaked shirt, saying, “Always got to cool the back off.” Alison slips his shoes back on his feet.

A few minutes later, Kyle stands up and holds his mother’s hand. “Say goodbye, Kyle,” she says, and he does, turning to look at Walker, and waving. He and Alison walk down the hallway. Kyle

runs his hand along the wall. Alison stops once and kisses Kyle on his head. He touches his nose to hers. Then he spins, once, and continues walking, holding her hand the whole way.