A concussion threw Maggie Hickey for a loop on the water, on the playing field—and even in the classroom. PAGE 12
Lessons from a teen mother

By Carmen Aviles

Try riding the bus to high school while lugging a bag of heavy textbooks, plus a 3-month-old infant, complete with a day’s worth of toys. It’s too much of a challenge. But can there be too much of a good thing?

Cover story

Hard knocks
Maggie Hickey was a star athlete and scholar. But after hitting her head, she couldn’t exercise or study without coming down with crippling headaches and other mysterious symptoms. It turned out she was suffering from the after-effects of a severe concussion—a condition that doctors are realizing is much more complex than they’d ever imagined.

Online overload
The Internet offers modern kids limitless access to information and the opportunity to explore virtual worlds. But can there be too much of a good thing?

Teen mom speaks out | Recommended reading | Friend us on Facebook | Chocolate and acne | Too many vitamins? | Mental health by the numbers | Twilight saga and teen romance

Stretching the limits
When he was born, the two ends of Elliot Cleckler’s esophagus weren’t connected. So his parents brought him to Children’s, home to a one-of-a-kind surgical program that treats Elliot’s condition.

Millions of children don’t get enough vitamin D | Glass thermometers still a safety hazard | RSV is a greater threat than flu | Study of glass-table injuries prompts industry changes

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Maggie Hickey was a star athlete and scholar. But after hitting her head, she couldn’t exercise or study without coming down with crippling headaches and other mysterious symptoms. It turned out she was suffering from the after-effects of a severe concussion—a condition that doctors are realizing is much more complex than they’d ever imagined.

I now work for the Massachusetts Department of Children and Families, where I help troubled girls. Many struggle at school or have had run-ins with the law. Some of them are pregnant. It’s hard for them to see the path to a life in which they’re not struggling. I was one of those girls; now I help them to get their lives back on track.

At 23, it feels like a lifetime since I was a teen. But I tell them about a scared girl, pregnant and failing school, who decided nothing was going to hold her back. I tell them about a girl who sometimes felt like giving up, but who found the strength to continue. I use my story to encourage them to go back to school, make amends with their families and persevere.

If I can do it, they can too.

MORE AT CHILDRENSHOSPITAL.ORG/DREAM/WINTER10
Another young mother talks about overcoming drug addiction
Read other stories from Children’s patients and staff

Thrive, Children’s Hospital Boston’s health and science blog, is updated every day with inspiring stories and videos about Children's Hospital. Visit childrenshospitalblog.org to check it out. Also, sign up for e-Dream, our monthly e-newsletter for parents and patients at childrenshospital.org/signup.
Socialize with Children’s

Check out Children’s Hospital Boston’s blog, Thrive. It features Children’s experts addressing timely health topics; stories from and videos about our patients, their families, clinicians and researchers; and the latest health information from around the world. Among recent highlights:

- Obsession and risk-taking
- What the Twilight saga’s New Moon, tells us about how teens think romance should be
- David Ludwig, MD, MPH, ponders the potential dangers of artificial sweeteners in our foods and drinks.
- Ask the Mediatrician: Michael Rich, MD, MPH, answers weekly questions about children and media use (also check out the story “Online overload” on page 10).

While you’re visiting Thrive, click on the right side of the screen to follow us on Twitter, watch our videos on YouTube, and find us on our ever-growing Facebook site, which now has more than 50,000 fans. Check out our fan-submitted photos and share your experience at Children’s with fellow patients and families.

FACT OR FICTION?

Eating chocolate and greasy foods causes acne

Despite what your parents might have told you, this isn’t true. Acne is caused by overactive oil glands trapped under the skin. During adolescence and times of stress, hormonal changes can cause these oil glands to overact, resulting in pimples, whiteheads or blackheads. The best way to prevent breakouts is to wash your face twice a day with a gentle facial cleanser.
— Marilyn Liang, MD, Dermatology

Q & A

Vitamins, minerals and supplements, oh my!

Everywhere you look, cereals, sports bars and even bottled water are marketed with added vitamins and minerals that claim to boost your immune system, give you energy and help you conquer the world (well, not literally). So how do you know if you’re getting enough—or too many—vitamins in your diet? We talked to Children’s John Watkins, MD, to understand why our bodies need vitamins, which ones are the most important and whether you can accidently ingest too many.

Q: If my children eat a healthy, well-balanced diet, do they need to take vitamins?
A: That’s a very important question. If your child eats a healthy and well-balanced diet, and are active, they probably wouldn’t. But, due to the way our food is processed, which depletes the vitamin supply in fresh foods, and the fact that we spend most of our days indoors, we often need to take supplements to meet our vitamin requirements. Also, children can be very picky about what they will and won’t eat, and taking vitamins can help ensure they are still ingesting the vitamins they need to thrive.

Read the rest of the Q&A about vitamins

WHITE COAT QUOTE

“Can’t help worrying that some will wish to emulate the relationship between Edward and Bella.”

—Claire McCarthy, MD, Thrive blog post about what the Twilight book and movie phenomenon might say about teen girls’ views on romantic relationships.

Related reads

Head Cases: Stories of Brain Injury and Its Aftermath by Michael Paul Mason

This collection shares a dozen strange but true stories of people whose lives have been altered by brain injury. Read “Hard knocks” on page 12.

Guts: The Digestive System by Ilia Houghton

Guts may sound gross, but this book teaches younger readers all about the organs that break down nutrients and provide energy for the body. Read “Stretching the limits” on page 6.

The Young and the Digital by S. Craig Watkins

Watkins looks at how technology is changing the lives of young people, the way they learn and the way they spend time with their friends. Read “Online overload” on page 10.

Angel’s Choice by Lauren Baratz-Logsted

This journal-style novel for young adults addresses the hard choices surrounding teen pregnancies. Read “Lessons from a teen mother” on page 3.

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Recent surveys indicate that more high school and college students are seeking psychiatric help for mental health problems than ever before.

#1, #2

Anxiety and depression are the two most common mental health problems in teens and college students, well above ADHD and eating disorders. HealthCentral.com

18 million

More students are being diagnosed with depression today than 10 years ago. NIH

0%

The statistical change in suicide rates that the Surgeon General attributes to suicide prevention hotlines. www.surgeongeneral.gov

2.16

Kansas City Royals pitcher Zack Greinke’s earned run average in 2009. He won the Cy Young Award last season after taking time off from baseball to seek help for anxiety and depression. MLB.com

50%

More students are being diagnosed with depression today than 10 years ago. NIH

More students are being diagnosed with depression today than 10 years ago. NIH
For Elliot Cleckler, millimeters made all the difference in treating his esophageal atresia.

Five weeks before his due date, Elliot Cleckler was diagnosed with esophageal atresia and tracheo-esophageal fistula (TEF), an abnormal connection between the esophagus and the trachea that can cause food traveling down the esophagus or acid refluxing up from the stomach to pass into the lungs. His parents, Jay and Heather, were upset but hopeful. “We left that meeting thinking, it could be so much worse; at least it’s just an esophagus,” says Jay.

Esophageal atresia is a birth defect that affects about one in every 3,600 to 4,000 babies in the United States, causing the esophagus to form in two unconnected segments—one stemming from the throat, the other from the stomach. Because of the gap between the segments, any liquid, including a baby’s own saliva, can’t reach the stomach and collects in the back of the throat. In the most severe cases, liquid can flow into the lungs and put the baby at risk for pneumonia or even drowning. Nearly 25 percent of these cases are long gap esophageal atresia (LGEA), in which the ends are so far apart that they can’t easily be connected. After six hours of exploratory surgery immediately after his birth, Elliot’s surgeons returned with heartbreakingly news: The ends of Elliot’s esophagus were so far apart that they hadn’t even been able to locate the bottom portion. He had LGEA. “We were running completely on hope until that point,” says Heather. “When we found out it was long gap, that hope stumbled a little.”

“Everyone told us not to look up LGEA on the Internet,” says Jay. “So, of course we did.” What Jay and Heather found were stories of children like Elliot, who endured failed surgery after failed surgery. Many of the “success” stories centered on colonic transposition, in which a piece of excess colon is stitched into place as a replacement esophagus, and gastric pull-up, in which the stomach is pulled up into the chest and connected directly to the top section of esophagus. But both procedures have significant drawbacks.

Elliot’s surgeons instead advocated for attempting to stretch the two short segments of his esophagus over time to see if the ends could be made to meet. But the Clecklers had reservations. In the best-case scenario, stretching still constrains the internal flow through the esophagus and thins the external walls, making them less resilient. In the worst cases, the esophagus, like a rubber band, will tear if it reaches its elastic limit.

None of the options gave the Clecklers much hope. “We kept coming across statistics showing increased esophageal cancer rates and low growth percentiles,” says Heather. “All of a sudden we realized we had gone from reading scary stories to living one.”

In their Internet searches, one name the Clecklers kept coming across was John Foker, MD, a pediatric surgeon from the University of Minnesota. Foker had developed his own repair for LGEA that uses tension-induced growth to save the esophagus. “These short segments of esophagus already have everything they need to grow into a normal esophagus,” says Foker. “We just need to trigger them.”

To do this, sutures are attached to the unconnected ends of the esophagus, stretched slightly and tethered into place. Just enough tension is applied to stimulate the esophagus to grow on its own. “You just pull on the esophagus a little and leave it there,” says Rusty Jennings, MD, director of Children’s Hospital Boston’s Esophageal Advanced Treatment Center. “When you go back the next day you’ll find the tether isn’t pulling as hard as it was the day before.” With the patient on a ventilator, paralyzed and heavi-

ly sedated for the duration of the process, tension on the sutures is increased gradually until the ends are close enough to be sewn together. It’s a deceptively simple concept applied to the most complex system imaginable: the human body.

In addition to growing in length, Foker’s method has resulted in thickening and strengthening of the esophageal walls, the opposite of what happens with simple stretching. “The esophagus is like a python,” says Foker. “It’s a muscle, and it naturally wants to expand.” Most patients see an average of 50-fold growth over the course of 10 days. They usually have two to three “growth” operations over a one-to-three-week period, often followed by an anti-reflux procedure. Over a span of three to six months, the children learn to eat solid foods and can have their feeding tubes removed. All of Foker’s patients—about 50 in the past 10 years—are now able to eat and swallow like other children.

By the time Jay and Heather found their way to Foker, they were emotionally out of gas. Elliot had already been through three major surgeries for LGEA and spent the first four months of his life in a neonatal intensive care unit near their home in Long Beach, California. Unfortunately, they found Foker just as he was retiring and disconnecting the only dedicated LGEA team in the country. It was the equivalent of pulling into a gas station on empty, only to find out they’re closed.

“It was the only solution that didn’t seem crazy to us, and suddenly it wasn’t even an option, so we just called Dr. Foker directly,” says Jay. Foker confirmed that there was no chance of repairing Elliot’s LGEA in Minnesota, but told the Clecklers that he was working directly with Jennings and Bradley Linden, MD, to recreate his program at Children’s, now the only pediatric institution in the world to offer his technique. At Foker’s urging, and despite Elliot’s doctors’ recommendations, the Clecklers contacted Linden directly. “We knew Dr. Linden had trained with Dr. Foker for years, so...
Jennings first saw Foker’s technique in person when one of his patients chose to go to Minnesota for the operation. Jennings told the family that he wanted to go with them and see Foker’s team in action. “They called me the night before and I dropped everything,” says Jennings. “When Dr. Foker started, the esophagus was so small that the nerve next to it looked huge. By the time his team was finished, it looked normal.

This is no small feat. Success is surrounded by a minefield of potential problems, including injury to nerves, blood vessels or even the heart. Tearing of tissue due to improper placement of sutures is a constant threat. The esophagus lies right along the recurrent laryngeal nerves; and one wrong move can permanently damage a child’s voice. “This is not just a surgical process, it’s a system,” says Jennings. “You need surgical technicians, a complete ICU, nurses, staff, gastroenterologists and radiologists. At Children’s, we have the advantage of depth on our bench. We have a team that can say ‘We will fix that child, whatever it takes.’

The Children’s team already started receiving referrals from around the world, including babies born with esophageal atresia and children whose esophagus had been damaged during other medical procedures.

Foker himself came to Boston to join Jennings and Linden for the final 12-hour surgery, which connected the nubs of Elliot’s esophagus for the first time. His ecstatic parents posted a video on their Facebook page of Elliot’s saliva passing through his esophagus. "Elliot remained at Children’s while he was weaned off of pain medication and learned to eat for the first time. The only permanent damage may be a para-
avocal cord from the previous surgery, which limits the upper register of Elliot’s voice, but even that now seems minor to the Clecklers. Heather downsizes the importance of being able to hit high notes and Jay talks about Elliot having a deep, tough-guy voice.

“Before we came to Children’s, we couldn’t even think about our future,” says Heather. “Now I feel like we’re in junior high again, we laugh so much.” For the first part of Elliot’s life, there hasn’t been much cause for laughter, but the tired couple holds hands and beams at the prospect of bringing their son home in time for his first Halloween. “It’s hard to imagine that when this all started, I thought, at least it’s just an esophagus,” says Jay.

MORE AT CHILDRENSHOSPITAL.ORG/DREAM/WINTER10

Read the Clecklers’ story in Jay’s own words
Follow Elliot’s journey in pictures from birth through his return home for his first Halloween
Hear from the Clecklers and the Children’s esophageal atresia “Dream Team” in a series of videos
View a Children’s story in which Elliot presents his revolutionary new process for treating esophageal atresia

Glass thermometers still a safety hazard
An analysis of patients in Children’s Emergency Department (ED) over five consecutive flu seasons reveals that children age 7 and younger had more than twice as many ED visits for respiratory syncytial virus (RSV) than for the seasonal flu. RSV can cause respiratory tract infections, and is the most common cause of bronchiolitis and pneumonia in children under age 1. The study, led by Florence Bourgeois, MD, MPH, and Kenneth Mandl, MD, MPH, both of Children’s Division of Emergency Medicine, shows that 23.6 percent of patients who underwent viral testing had RSV, while only 11.2 percent had influenza. “RSV has been underdiagnosed,” says Bourgeois. “Based on our data, much more should be done in terms of prevention.”

Bourgeois recommends the same preventive measures for RSV that she does for influenza: frequent hand washing, using alcohol-based hand sanitizers and keeping children home when they’re sick.

RSV is a greater threat to young children than flu
Children’s study of glass-table injuries prompts industry changes
A review of injuries caused by glass tables, performed by Children’s in March 2009, has resulted in a consortium of industry leaders publishing new standards that recommend the use of tempered glass. The original study showed that half of the glass-table injuries logged by Children’s Emergency Department would have been preventable or less severe with tempered safety glass. “To have industry standards be changed so soon after we published the study is a blessing and a testament to the importance of research,” says Amir Kimia, MD, of the Children’s Division of Emergency Medicine, who led the study. “It’s my hope that the next glass-table injury I see in the ED will be my last.”

MORE AT CHILDRENSHOSPITAL.ORG/DREAM/WINTER10

Hear first-hand from children and their parents about what it’s like to take part in medical research
Researchers explore why some otherwise healthy children with flu have become critically ill
Could medical records sound an alert about domestic abuse?
We’re all familiar with the myriad benefits of the Internet: A click or two of the mouse unfolds a world of information, trivia disputes are swiftly settled, you can even chat with friends across an ocean. But, for a small fraction of kids, the Internet’s draw may prove too enticing. Internet addiction, which is loosely defined as excessive use of the Internet that negatively impacts academic, social and family life, appears to be on the rise in much of the industrialized world. Although the diagnosis isn’t yet officially recognized in the United States, it’s being considered for the next edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM), the American Psychiatric Association’s chief diagnostic handbook.

While empty gin bottles in your child’s room will clue you in on a drinking problem, signs of Internet addiction are subtler. “Kids can withdraw from real-life interactions and dedicate less time, energy and focus to them as they become more directed toward the online world,” says Michael Rich, MD, MPH, director of the Center on Media and Child Health at Children’s Hospital Boston. Signs that a child may be addicted include losing track of time while using the computer, feeling anxious when away from the Internet and sacrificing other aspects of life—like sleeping, eating, doing homework and going out with friends—in order to spend more time online.

Artificial versus real life

It’s normal and healthy for teens to instant-message friends, post to Facebook and play online games, but Rich cautions that some online behaviors—like role-playing games, porn-surfing and online shopping—can be more addictive than others.

“When kids spend much of their problem-solving energy on functioning and succeeding in the virtual world, it can come at the expense of connection to the real world,” says Rich. Learning how to interact with peers, how to stand up to a bully or even how to catch a football takes practice and skill, and includes a real chance of failure or humiliation. In the online world, it’s easier to achieve goals, and failing doesn’t usually mean as much. But Rich worries that avoiding the so-called school of hard knocks in lieu of the virtual world may have lasting implications for teens’ social skills. “Life is a process of putting yourself in progressively more complex and demanding social situations; it’s a series of small failures and restarts,” says Rich. “Online, kids aren’t only being denied that experiential learning, they’re also learning in an artificial environment with artificial rewards.”

The susceptible teen brain

To add fuel to the fire, adolescents are more vulnerable to addiction because of the way their brains develop, says Frances Jensen, MD, senior assistant in Neurology. Teen brains have both fast-growing synapses, which promote speedy and efficient learning, and an undeveloped frontal lobe—the area of the brain responsible for reasoning and judgment. In recent years, research has revealed that addiction is a function of learning and memory. “When you’re learning something new, your brain creates synapse connections,” explains Jensen. “With practice, the connections get stronger.” The same neurological response happens with addiction, and adolescents’ brains allow them to get addicted faster and more permanently than adults. “It’s a perfect storm,” says Jensen. “Their brains are making all these connections and they’re highly influenced by their environment. But they don’t have the judgment to say, ‘I’m spending too much time on the Internet, it’s making my grades go down.’ That sort of reflection requires insight and decision-making, which is all controlled by the frontal lobe.”

ADHD and addiction

While researchers don’t fully know the impact of relentless online stimulation on the growing brain, a recent study of seventh-grade students in Taiwan suggests that kids with attention-deficit hyperactivity disorder (ADHD) may be more prone to Internet addiction.

The findings don’t come as a surprise to psychologist Michael Neessen, PsyD, co-director of Children’s ADHD Program. “Children with ADHD have trouble with self-regulation and distractibility,” he says. “The Internet provides the constant stimulation that they really thrive on.” Although the Internet can provide an astounding educational opportunity, it can pose challenges for kids with attention problems: While other kids may easily discern between a Web site that’s relevant and one that’s only tangentially related, kids with ADHD may struggle. “They’re more easily distracted,” he says.

But the news isn’t all bad. Neessen also emphasizes the Internet’s strengths for children with ADHD. “Many of them struggle to fit in socially,” he says. “When they’re online, they don’t get made fun of if they click on the wrong button or spell something wrong.” For every kid who uses electronic media, moderation is the key, he says. Simple time-management tools, like kitchen timers, can remind kids how long they’ve been online. Setting goals and expectations around appropriate Internet use can help ensure that it encourages learning and doesn’t impede a child’s social and school performance.

MORE AT CHILDRENSHOSPITAL.ORG/DREAM/WINTER10

2. Read the top five tips to help you manage your child’s Internet use
3. Setting the record straight about media myths, including whether you can boost your child’s IQ with smart videos
On a Friday afternoon last October, 15-year-old Maggie Hickey was getting ready to go to a high school football game when she started feeling queasy. The next thing she knew, she was lying on a couch with a whopping headache, a gash over her left eye and only the fuzziest idea about what had happened. “I felt so disoriented and started crying,” Maggie remembers.

It turned out that Maggie had fainted, smashing her forehead on a doorknob as she crashed to the floor. Eight stitches later, Maggie and her parents left the emergency room thinking that the mysterious incident was over. “It hurt a lot but I was mostly embarrassed,” she says. “I was more worried about what people were going to think of my stitches than anything else.” So, despite a dull headache that wasn’t quelled by Motrin, Maggie returned to school and varsity rowing practice that Monday. But the pressure in her head didn’t go away. Instead, the pain intensified—especially when she exercised, studied or, strangely enough, when she entered brightly-lit areas, like a room with fluorescent lights or the sunny outdoors. Each day ushered in more peculiar maladies: Just sitting still in class caused crippling headaches and Maggie became anxious, fatigued and forgetful. Soon, she couldn’t eat because of constant nausea, and couldn’t sleep because of the incessant pain.

Until her accident, Maggie sailed through school, earning straight As, despite her heavy sophomore year workload. But she started bringing home Cs—partly as a result of losing her homework and forgetting to bring books to class, but mostly because her concentration was shot. As Maggie’s grades plummeted, her social life also screeched to a halt. She stopped going out with friends, preferring to lie down in her dark bedroom, which soothed her symptoms. “It was frightening,” says her mom, Judy, who watched her daughter transform from an athlete bursting with energy to a sluggish girl with sunken, dark eyes. “After three weeks, she didn’t look like herself anymore.” Maggie’s personality changed too, as her confusion and frustration spiraled. “My whole life was falling apart,” Maggie says. “I thought, ’This just can’t be normal.’”

An invisible epidemic?
Maggie was referred to Children’s Hospital Boston, where the Hickeys were startled to learn that Maggie’s problems were due to the after-effects of a severe concussion. William Meehan, MD, director of Children’s Sports Concussion Clinic in the Division of Sports Medicine, made the diagnosis after assessing Maggie’s brain function through computerized neuropsychological testing, an advanced diagnostic technique that measured her reaction time and verbal and visual memory—the faculties most often affected by concussions. While Maggie was relieved to have an explanation for
Meehan understood Maggie’s incredulity. “Only recently has it been recognized that concussions involve any kind of brain dysfunction,” he says. “There’s been a lot of attention paid to them in the past decade, but before that, they were thought to be short-lived and fully recoverable, so people didn’t pay them much attention. Now, as doctors standardize diagnostic tests and treatment plans for concussions, they’re re-examining many of the long-held basic assumptions about them. Gone is the idea that someone needs to be knocked out to get one; even a mild blow can impact brain function. And gone is the notion that someone needs to be hit in the head in order to be concussed—a blow to the chest can also do the trick. The “shake it off” approach to concussions is certainly changing—from doctors’ offices to the 20-yard line—thanks, in part, to a surge in media attention. News reports are revealing that some retired NFL players are suffering mid-life mental problems, including dementia and suicidal depression, may be the result of years of repetitive brain injuries. Media accounts are also illuminating the rare but catastrophic condition called second impact syndrome. For reasons doctors don’t fully understand, those who have sustained a concussion are three times more likely to suffer another one. And the second blow can cause major long-term neurological impairments and even cause a deadly brain swelling. And while the media spotlight has focused on professional athletes, attention is turning to the potential hazards that younger children face even during practices.

Exactly how many teenagers are affected by concussions—and to what extent—are two of the many unanswerable questions about the condition. Children’s Sports Concussion Clinic alone sees about 40 patients a week with concussions—and that’s not counting the patients with more severe head injuries who are treated in Children’s Brain Injury Program. National statistics estimate the number of high school athletes who suffer concussions at 10 percent. But it’s probably much higher, since studies show that almost half of these athletes don’t report their injuries, either because they don’t recognize their symptoms as signs of a serious injury or because they don’t want to get relegated to the sidelines. “If you ask players anonymously at the end of the season if they ever suffered a blow to the head and then had nausea, vomiting or a loss of consciousness, the numbers are much higher,” Meehan says.

The under-diagnosis problem is so widespread that experts describe it as an epidemic. “It’s at a level where it’s happening so often and is so under-reported and under-treated that we don’t understand all the implications,” says Meehan. “What are the cumulative effects? How does memory loss affect children’s school lives? Down the road, how does that loss affect the workforce? We can’t even imagine the ramifications.”

Possible long-term effects are especially hard to study since the traditional laissez-faire approach to concussions has resulted in scattered recordkeeping. “We have ideas about what happens to kids who are admitted to hospitals with brain injuries, but we don’t know what happens when they’re treated in emergency rooms and go home,” says Robert Tasker, MD, a world authority on head trauma and Children’s new director of Neurocritical Care. One of his goals is to help track the outcomes of brain injuries months, years and decades down the road.

Lessons learned

For Maggie, a drug did seem to help. But she still fought an uphill battle against her unremitting symptoms. She sat out the rowing season and when she gradually returned to school as a part-time student, the smallest amount of homework set her back phyically. “I couldn’t read two pages a night, let alone three chapters,” she says. “I couldn’t remember anything, so I’d take lots of notes, but it was still so hard to keep things straight.” For Maggie, the hardest part was having to justify her frequent absences and doctor-sanctioned light workload to teachers and students who didn’t understand her condition. As the months wore on, classmates accused her of playing up her symptoms. “Every my friends started to think I was milking this concussion thing,” she says. “They didn’t realize I was dragging myself to classes and it wasn’t that sweet of a deal.” To Meehan, Maggie’s hardship at school is telling, and highlights yet another aspect of concussions that’s waiting to be explored. “Nobody ever recognized that if someone’s brain isn’t functioning properly because of a concussion, his grades are inevitably going to be affected,” he says. “A lot of ‘dumb jocks’ were probably just kids hugely affected by many concussions. But nobody knew it and nobody helped them.” Meehan sees a disconnect between academic and physical expectations: “Kids wouldn’t fail gym if they couldn’t do a pushup or a broken arm. But with concussions, it’s a different story.”

Maggie finally started feeling better in April, six months after hitting her head. Eventually, a whole day went by when she didn’t have a headache, and eventually, several days in a row passed symptom-free. The day Meehan gave her the green light to exercise, she was so excited she went out and ran three miles. “I hadn’t moved in six months, and the fact that I could was so awesome.” Maggie says. She resumed rowing with a vengeance and, with help from a tutor, caught up in school. “Things turned right around and she got her drive back,” says Judy. “She’s her engaging and charming self again.” During Maggie’s final neuropsychological assessment, she scored in the 97th percentile. Maggie’s full recovery didn’t surprise Meehan. “If a child’s concussion is managed properly, she’ll do just as well at sports and school as she always did,” he says. “The key is making sure these kids get diagnosed and treated while getting the chance to completely recover.” And while Maggie essentially lost half a year of her life, she feels she learned some lessons she couldn’t have picked up in a classroom. “I’m grateful now just to be able to go for a run,” she says. “When you go through something like this, you realize how much you do take for granted. You don’t have a debilitating injury. I feel much more privileged about everything I’m able to do. I never thought like that before.”

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MORE AT CHILDRENSHOSPITAL.ORG/DREAM/WINTER10

Research by Children’s Alexander Rotenberg, MD, PhD, is shedding light on what happens during concussions and head trauma on a molecular level.

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—William Meehan, MD
Director of Children’s Sports Concussion Clinic