Every Monday at 9 am, 3East leadership holds a unique two-hour session that is part support group, part tutorial. The participants, who join in person or by conference call, are learning the ins and outs of dialectical behavior therapy (DBT). Each is a parent of a child who is—or has been—part of the McLean Hospital DBT program known as 3East.

“What is remarkable is we have parents of adolescents who completed the program months or even two or three years ago continue to call in,” said Blaise Aguirre, MD, medical director of 3East, adding that some live abroad, as far away as Australia and China. Aguirre is known internationally for his work on borderline personality disorder (BPD) in adolescents.

“Allowing parents to continue to connect with us helps with their ongoing learning of DBT,” added Michael Hollander, PhD, director of training at 3East. “We role-play issues they are having with their teens and can give them on-the-ground coaching.”
LETTER FROM THE CHIEF

The latest statistics from the National Institutes of Health suggest one of five adolescents has a diagnosable mental health disorder. Yet in the last year, less than half of teens with psychiatric disorders received any kind of treatment. Fortunately, effective evidence-based therapies continue to multiply and are being better integrated with primary care pediatric practices and school nursing.

The work we all do to better the mental health and wellness of young people has never been more important.

Researchers and clinicians at McLean Hospital have been working hard to find innovative strategies to detect and treat psychiatric disorders in youth. In this edition of Update, read about what the founders of one of the first intensive DBT programs in the country have learned since their initial startup nearly a decade ago. We’re also working on identifying new markers to better predict which teens will act on suicidal ideation, and learn about an internet-based pilot that is giving college students greater access to mental health treatment. Finally, we will tell you the latest on how marijuana impacts the developing brain.

We hope you find this issue of Update informative. If I can do anything to assist you with your work or your patients, please do not hesitate to contact me at jgold1@partners.org.

Sincerely,

Joseph Gold, MD, Chief Medical Officer; Chief, Nancy and Richard Simches Division of Child and Adolescent Psychiatry

“I know how it is to need help and be terrified to ask.”

McLean Hospital recently launched Deconstructing Stigma: A Change in Thought Can Change a Life, a national public awareness campaign intended to change the way mental illness is perceived. Told through the eyes of its participants, this campaign boldly challenges the misconceptions of what those with mental illness look like and is intended to spark conversation. Shellye is one of the many people to participate.

Shellye hopes her passion for music evolves into a career. She sees herself on the business side of the industry, possibly as a tour manager, as she’s not a performer herself. In fact, as a child, Shellye had trouble even talking.

“I started seeing a therapist when I was 4 or 5 because I had selective mutism—I would only talk to people I knew,” said Shellye. “And when I grew out of that, I still didn’t speak much, out of fear of saying the wrong thing and being judged.”

Shellye hit puberty earlier than the other girls, which gave the bullies in sixth grade another reason to taunt her. Test anxiety turned into full-blown panic attacks. Shellye’s family interpreted the
DBT is a cognitive behavioral treatment approach that emphasizes the development of four skills: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. At 3East, patients and their parents learn the skills through an intensive four- to six-week program.

“We require that everybody on the units, including mental health workers, actually learn the treatment, use the skills, and be part of the consultation team,” said Janna Hobbs, LICSW, clinical director of 3East.

3East, which derives its name from the original location—the third floor of East House on the McLean campus, has grown since its inception in September 2007 to a total of 28 beds at five locations, and includes a coed partial hospital program and outpatient clinic. The residential program works with adolescent girls ages 13-21, treating suicidal behavior, self-injury, impulsivity, depression, anxiety, disordered eating, substance use disorders, and post-traumatic stress disorder. It also was one of the first programs nationally to utilize DBT as the primary model for the treatment of BPD in teens and young people.

“There are over 30 randomized trials substantiating the efficacy of DBT in psychiatric disorders and BPD. It has been shown to be particularly effective in addressing suicidal behaviors and self-injury,” noted Hollander, who is internationally recognized for his work on self-injury. “In the course of the treatment, we are seeing big reductions in suicidality, self-injury, and hospitalizations.”

One of the benefits of the 3East program is its integration with McLean Hospital, a premier psychiatric clinical and research facility and a teaching hospital of Harvard Medical School. For patients who need specialty consultations, McLean offers world-renowned experts in eating disorders, neurology, trauma, medication evaluation and management, educational testing, and attention deficit disorder.

“Each patient receives a specialized treatment plan. If something is not working, our experience and expertise can find a different approach that may be more effective and incorporate that,” noted Aguirre.

“We also truly offer a continuum of care. You can enter at the residential or partial hospital level. We have group residences for high school and college-age kids and the DBT outpatient clinic. We are about to start a similar program for boys as well,” added Hollander.

3East is actively researching the effects of DBT in adolescents, including tracking outcomes and changes in neurobiology through neuro-scanning. The data is used to amend program offerings and provide better outcomes. They are also piloting a program that combines DBT with prolonged exposure (PE) therapy for individuals with post-traumatic stress disorder, under the directorship of Cynthia Kaplan, PhD. Studies in adults have been promising, but little is known about its efficacy in young people. 3East is collaborating with the DBT PE treatment developer to bring this important treatment to this age group. They are conducting research to further clinical knowledge in this area.

“As a result of our program, these young people are leaving with far fewer medications and fewer side effects.”

The program takes referrals from around the country and the world. Some patients come to 3East because they lack motivation or may not be a good fit for existing programs nearby.

“Our dedicated team is experienced in working with tough cases and each clinician made the deliberate choice to work with what can be a challenging population. The hallmark of our programs is technical expertise coupled with compassion,” explained Hobbs. “We simply don’t give up on patients.”

Many patients with a history of multiple hospitalizations and many medications are admitted.

“As a result of our program, these young people are leaving with far fewer medications and fewer side effects,” noted Aguirre. “Through the use of DBT and skillful living, they are able to change how they think and act and live better lives.”

McLean’s 3East programs are self-pay. To schedule a consult or make a referral, please call Sarah Hunt, administrative manager, at 617.855.2804.
For more than 20 years, Staci Gruber, PhD, director of McLean Hospital’s Cognitive and Clinical Neuroimaging Core and associate professor of psychiatry at Harvard Medical School, has dedicated her work to uncovering the mysteries of marijuana. As the country continues to debate the pros and cons of the legalization of marijuana and medical marijuana, Dr. Gruber’s work has never been more critical. She recently sat down with McLean Hospital’s news team for an exclusive interview.

What has been the focus of your work?
In addition to work in bipolar disorder and other psychiatric conditions, I’ve spent the last two decades involved in marijuana-related research, in particular, studying the impact of recreational marijuana on a number of different areas, including cognitive performance, brain structure, and function. More recently, I’ve focused on looking at the type and level of changes that result from early exposure to marijuana versus exposure at a later age.

What have you discovered about the impact of early marijuana use?
The results have been striking. Data from our studies and other groups have now demonstrated that chronic, heavy marijuana smokers with earlier onset of use (under the age of 16) show significant changes in brain structure and function relative to those with later onset. They appear to have more difficulty with cognitive tasks, particularly those mediated by the frontal cortex, as well as altered patterns of brain activation and less-organized white matter, the bundles of nerve fibers and myelin that impact how information is communicated from one brain region to another. Interestingly, later onset smokers don’t appear to have the same level of difficulty with frontally mediated tasks and appear more similar to those who have never smoked.

Does the type of marijuana product used make a difference in your findings?
While we’ve looked at age of onset, frequency, and magnitude of marijuana use and done some work exploring the ways that people use cannabis (smoking, vaporizing, dabbing, edibles, etc.), there’s a lot we still have to learn. We’ve recently begun collecting information on the actual products that our subjects use—analyses of the cannabindoid constituents within the products themselves—in other words, how much Δ9-tetrahydrocannabinol (the main psychoactive component in cannabis) is present and what other components are on board (e.g., other cannabinoids like cannabidiol or CBD, which is not common in recreational products as it is NOT psychoactive). So far, we can say that earlier age of onset as well as frequency and magnitude of use are all related to task performance and measures of brain health.

What about those who start early but then discontinue marijuana use?
We are currently following a cohort of subjects who previously smoked marijuana regularly but have discontinued their use. The big question is whether or not the brain “recovers” to the level it was prior to smoking. Given our finding of earlier onset of use being related to lower white matter organization, we are also trying to figure out the “chicken or the egg” or cause-and-effect question—are younger consumers with lower white matter integrity more likely to start smoking marijuana or is lower white matter coherence the result of earlier onset of smoking? While we see an association, it doesn’t address causation, which is best studied using a longitudinal and not a cross-sectional design.

ABOVE: fMRI image of healthy controls (A) vs MJ smokers (B) completing an inhibitory task. Early onset smokers (C) activate a different area relative to late onset smokers (D) who look more similar to controls with regard to regional activation patterns.
Why marijuana research is so critical at this point in time?

Perception of risk and harm related to marijuana use is at an all-time low among our youth, which may in fact be the result of our ongoing dialogues around possible benefits of medical marijuana. I often have kids and older teens ask me, “How can it be bad? My best friend’s mother takes it as medicine.” You can understand how that would be confusing. In fact, for the first time in 2015, the national Monitoring the Future study reported that more high school seniors smoke marijuana every day than smoke cigarettes. It is important to let them know that during adolescence and teen years, the brain is still developing and vulnerable to many influences, including drugs. In addition, more potent, concentrated forms of marijuana like shatter, wax, dabs, and budder are increasing in popularity and may be more likely to cause negative effects in those who are still developmentally immature, given the very high levels of THC in these products. My work, and that of my colleagues in this field, is dedicated to answering many complicated questions that are designed to help policymakers make sound, fact-based decisions.

Dr. Gruber’s work has recently been featured on CNN, Yahoo News, ESPN, and PBS.
A McLEAN RESEARCHER SEARCHES FOR NEW ANSWERS

In his lab at McLean Hospital, Randy P. Auerbach, PhD, ABPP, is using wide-ranging technological advances to improve our understanding of why certain depressed youth develop depression and engage in suicidal behaviors.

“Identifying markers [objectively observable signs of disease] that improve early diagnosis of depression in youth will have profound consequences across a patient’s lifespan,” said Auerbach, director of Clinical Research for the Nancy and Richard Simches Division of Child and Adolescent Psychiatry and director of the Child and Adolescent Mood Disorders Laboratory. “Our ultimate goal, of course, is to use our findings to advance both prevention and intervention efforts, thereby reducing adolescent distress and needless loss of life.”

Auerbach’s research is multidisciplinary, using a variety of approaches, including lab-based experiments, electrophysiology, functional magnetic resonance imaging, and magnetic resonance spectroscopy, to determine why depressive symptoms unfold, how self-injurious and suicidal behaviors develop, and what changes in the brain during treatment.

Depression in Adolescents

Recently, in a series of published papers, Auerbach sought to describe neural processes that may underlie depressotypic self-referential processing biases—the tendency of depressed youth to focus on negative stimuli in their environment—which may prolong and increase the severity of depressive symptoms. Using a systematic approach, Auerbach identified electrophysiological (electric activity in the brain) markers—with millisecond precision—that differentiate depressed and healthy adolescents. Moreover, Auerbach and colleagues also demonstrated that these effects were present in at-risk, never-depressed adolescents (owing to a maternal history of depression), showing that the neural deficits may be present prior to depression onset.

“EEG and event-related potentials allow us to probe cognitive-affective processes critically implicated in depression onset,” said Auerbach. “Identifying objective signs of risk may help us develop new preventative-intervention approaches for adolescents.”
Building on this work, Auerbach also is testing whether these markers associated with depressotypic self-referential processing biases also predict treatment response to cognitive behavioral therapy. These findings, which are expected to be published in the next year, may ultimately help direct youth into optimal treatment.

**Identifying Mechanisms Underlying Adolescent Suicidality**

Presently, suicide is the second leading cause of death for adolescents, and while depression is strongly associated with contemplating suicide (ideation), it shows a weaker relationship with attempting suicide. Auerbach's work, therefore, has sought to identify mechanisms that are directly related to suicide attempts among depressed adolescents.

“About one-third of adolescents who have suicidal thoughts will make a suicide attempt,” said Auerbach. “At the same time, from a clinical perspective, these two groups—ideators and attempters—are extraordinarily difficult to differentiate. Identifying objective means of determining which suicide ideators are most likely to make a suicide attempt would improve our treatment and improve the safety of high-risk adolescents.”

In a recently published article, Auerbach demonstrated that depressed suicide attempters show elevated levels of anhedonia (an inability to experience pleasure) relative to depressed suicide ideators, despite comparable levels of depression, anxiety, and suicidal ideation. Interestingly, anhedonia severity seemed to negatively affect the integration of rewarding experiences into future decision-making. Whereas depressed suicide ideators used reward in prior trials to guide decision-making for future trials, the more anhedonic suicide attempters failed to do so.

“Rewarding experiences guide our decision-making processes and help us all navigate the world around us. For suicide attempters, the failure to experience pleasure and integrate rewarding experiences may contribute to feeling hopeless and helpless. Over time, this may potentially increase risk for suicidal behaviors,” noted Auerbach.

**Internet-Based Cognitive Behavioral Therapy for Depression**

As co-director for the WHO World Mental Health Surveys Initiative International College Student Project, Auerbach has taken a lead role in improving assessment and treatment for depressed college students. In a recently published study in *Psychological Medicine* that compared college students and same-aged non-students across 21 countries, Auerbach showed that mental illness—particularly depression and substance use disorders—led to increased school dropout rates. Results also indicated that a minority of these affected students received sufficient mental health care.

“Only about one-sixth of college students who reported emotional problems in the past 12 months reported receiving appropriate care,” Auerbach noted. “And, perhaps not surprisingly, rates of use decrease as income decreases. Thus, there is a glaring need for us to find other means to improve access to care.”

In a recently funded National Institute of Mental Health study, Auerbach is working with Dr. Stephanie Pinder-Amaker (McLean Hospital), Dr. Ronald Kessler (Harvard Medical School), and Dr. Pim Cuijpers (University of Amsterdam) to develop a system for rapid online depression assessment. Once identified, students are offered access to internet-based cognitive behavioral therapy for depression. The study was launched in several colleges and universities around the Greater Boston area in fall 2016.

“Our long-term goal will be to develop an algorithm that predicts which individuals are likely to respond to this low-cost, easily disseminable treatment,” said Auerbach. “Once identified, we can then work with colleges and universities to channel students into the optimal level of care.”

**Searching for New Answers**

Depression has a pernicious impact across the developmental lifespan, and Dr. Auerbach’s research has taken a systematic approach to improving our understanding of neurocognitive mechanisms implicated in the onset and treatment of major depressive disorder. Although many unanswered questions remain, Dr. Auerbach is steadfast and resolute in his commitment to improve the psychological well-being of all youth.

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**References**

McLean Hospital and its child and adolescent psychiatry specialists will be participating in a number of conferences throughout 2017.

If you plan to attend any of these meetings, we hope to see you! To schedule a time to meet with us, please call 844.425.8964.

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**Visions of Community 2017—Federation for Children with Special Needs**
March 4, 2017
Boston, MA

**MEDA’s 22nd Annual National Conference**
March 10-11, 2017
Newton, MA

**7th Annual Special Education School Fair and Conference—Special Needs Advocacy Network, Inc.**
March 23, 2017
Marlborough, MA

**IECA’s Spring Conference**
May 10-13, 2017
Denver, CO

**Psychiatry in 2017**
June 15-17, 2017
Boston, MA

**24th Annual OCD Conference**
July 7-9, 2017
San Francisco, CA

**AACAP’s 63rd Annual Meeting**
October 23-28, 2017
Washington, D.C.

**IECA’s Fall Conference**
November 15-18, 2017
Washington, D.C.

**ABCT Annual Convention**
November 16-19, 2017
San Diego, CA