

HEALTH

Teenagers wired to take risks

What's difficult for parents to sort out is what is normal behaviour and what's cause for real concern

TEENAGERS SEEM to be hard-wired to take risks. Scientists who study the adolescent brain are finding that experimentation is a natural part of these years, even though some risks can have serious consequences. Among those aged 10 to 24, three-quarters of all deaths are from preventable causes, like motor vehicle accidents and suicide, according to the most recent U.S. Youth Risk Behavior Survey. It can be hard for parents to recognize the difference between "normal adolescent behaviour," like experimenting with drugs and sex, and what's cause for real concern, says Dr. Blaise Aguirre, an instructor in psychiatry at Harvard Medical School.

Today's teens are "stressed out," Aguirre says, and it's taking a toll. Over the last five years, there's been a steady increase in the number of anti-depressants prescribed to Canadian teens, according to IMS Brogan, a health information and consulting company. "One in five teenagers, and one in four Ivy League students, are now self-injuring," or cutting themselves, often in moments of emotional distress, Aguirre says. There's evidence eating disorders are on the rise, too.

Aguirre is medical director of 3East at the Harvard-affiliated McLean Hospital, a specialized program for teens and young adults with borderline personality disorder, which is characterized by black-and-white thinking, fears of abandonment, chaotic relationships and impulsivity. Two of his colleagues, Dr. Esther Dechant, medical director of McLean's Klarman Eating Disorders Center, and Michael Hollander, director of 3East's day hospital and an expert in self-injury, will be in Toronto on April 7 to speak about their work as part of the Scienta Health Series.

Teens are naturally risk-takers. Last year, Stephanie Burnett of University College London's Institute of Cognitive Neuroscience published a study in which 86 boys and men (ages 9 to 35) played computer games, and she measured their response. Teenagers "chose risky options more," she says, and got the biggest emotional charge when a risky choice produced a surprising win. The most risk-taking, she found, was among 14-year-olds. In another recent study, Temple University

psychologists Jason Chein and Laurence Steinberg measured the brain activity of teens as they played a simulated driving game. When teens were with friends, they took more risks—and they were more sensitive to potential rewards of risks than when they were alone.

Teens are more driven by thrill-seeking and reward, it seems, because of how our brain changes as we age. In childhood, what

"reaches a plateau," she says, "and then temporarily stops functioning." Teens are plugged into any number of devices, often even more so than adults, and they're "taxing a system that isn't fully developed," Aguirre says. "No wonder some are unable to handle it," and find themselves overwhelmed.

Information overload isn't the only source of stress. "There's been a shift in what we think of as a beautiful body," says Dechant, from curvy Marilyn Monroe to today's models, who are "size zero or double zero." Rates of bulimia seem to be increasing, and anorexia is spreading from what was traditionally "the upper middle class, to all walks of society," she says. Alarmingly, more teens seem to be cutting themselves. "It looks like it's starting earlier and earlier," Hollander says. Cutting is rarely a suicidal act, he notes, but



Stressful age: Rising rates of depression, self-harming behaviours and eating disorders

Chein calls the brain's "reward processing system" (which is involved in emotion) and its "cognitive control system" (which holds impulses in check, and allows for reasoned decisions) are immature. In early adolescence, the reward processing system undergoes rapid change—but the cognitive control system isn't fully mature until our mid-twenties.

Teens are also vulnerable to information overload. Angelika Dimoka, director of the Center for Neural Decision Making at Temple University's Fox School of Business, has looked at the impact of this on adult brains, using functional magnetic resonance imaging. As her subjects received more and more information to process, she found, activity jumped in the dorsolateral prefrontal cortex, which is involved in decision-making. This area

those who commit suicide often have a history of self-injury. Parents need to talk about it with their teens in a "neutral way, which isn't easy," he says, "and access some help."

Aguirre uses mindfulness, derived from Buddhist meditation practice, as part of his treatment for patients. Studies have shown that mindfulness-based meditation can reduce anxiety, improve attention and reduce the emotional impact of pain. "It's about slowing down the brain, and focusing on the here and now," Aguirre says. A few slower moments each day sounds like something most teenagers, whose brains are programmed to take risks, could benefit from. **KATE LUNAU**

The Harvard team will speak in Toronto on April 7, as part of the Scienta Health lecture series: www.ramsayinc.com/html/lunches.html