This Is Your Brain On Tobacco: A Research Update begins with the host identifying some basic facts about the dangers of tobacco use. These include a heightened risk of developing heart disease, stroke, lung disease and several types of cancer. “Each year cigarette smoking is linked to approximately one of every five deaths in the U.S.,” the host states.

Viewers are then introduced to six teen smokers who will be interviewed throughout the video. The average age when they started smoking was about 15, although one of them started at 13. The host presents an interesting question: what makes teens want to smoke and why do only five percent of smokers who want to quit succeed? This will be the puzzle that the program will help viewers understand.

WHY PEOPLE SMOKE
“We have this natural reward system in our brain that essentially tells us what is enjoyable and what is pleasurable,” explains Dr. Joseph McClernon, Assistant Professor and Director of the Tobacco Research Laboratory at the Duke University Medical Center. Because nicotine enters the brain within seconds of taking the first puff, it has an immediate effect on the brain, releasing dopamine—a chemical that kicks the reward system into action. Dr. McClernon explains that by activating the reward system, nicotine tricks the brain into thinking that nicotine consumption is pleasurable and should be consumed again. “In essence, what’s happened is that these drugs have hijacked your natural reward system.”

Tobacco is as addictive as cocaine and heroin. This is due to the positive feelings that it initially produces in the user. Andrew, one of the teen smokers, agrees. “When you’re smoking, it gives you this little bit of high at first.”

There are other reasons why teens continue smoking. The host explains that researchers at Duke University have determined that nicotine affects more than one area of the brain, making the body respond to nicotine in a variety of ways—such as feeling a release of tension and an increased ability to concentrate.

“I do feel that cigarettes calmed my stress,” says Natasha, a teenage smoker. “It relaxed me,” agrees Matt. The host explains to viewers that the good feelings that are produced by nicotine eventually dwindle as the brain adjusts to the drug. The result is that the smoker needs more nicotine to get the same effect. “I was smoking about one or two [cigarettes] a day, and then after a while it just started to snowball into what eventually became half-a-pack to a pack a day,” reports Andrew.

Dr. Joseph R. DiFranza, Professor of Family Medicine and Community Health at the University of Massachusetts Medical School, defines the period of time between smoking a cigarette and needing another as the latency. “Over time, once the addiction starts, that interval gets shorter and shorter,” he says.
Viewers are presented with a cartoon depicting nicotine as an alien living in your brain, feeding on nicotine and telling your brain to consume more and more as it grows larger and larger. The host explains that after just a brief time, smoking ceases to be a pleasurable pastime for smokers and turns into a habit. “Smokers become dependent on smoking just to feel normal,” he states. “For many smokers, even a day without nicotine is excruciating.”

Anthony recalls a time when he tried to quit smoking. He became so irritable that his cousin ran to the store to buy him cigarettes so that he would calm down. Andrew reports that not smoking made him extremely anxious. Another teen, Natasha, concurs. “When I’m not able to have a cigarette, I tend to be very cranky.”

**ADDITION**

In the next segment, viewers learn some interesting facts and new theories about nicotine addiction. First, we learn that many teen smokers refuse to admit they have an addiction; they often maintain that they have the willpower to quit whenever they want. Andrea recalls, “I felt at the time I could have quit any time.”

New theories about how addiction occurs in teens are being researched by top experts in the field. Dr. DiFranza presents viewers with some shocking information: you don’t have to smoke every day to develop a nicotine addiction. According to his research, addiction begins after the very first cigarette. Dr. DiFranza and his team have observed that after the very first cigarette, nicotine alters the brain’s chemistry. “Some of the kids that we surveyed say that they had symptoms of addiction after one cigarette,” Dr. DiFranza states. “About 80 percent said they had symptoms of addiction after they finished their first pack.”

Dr. DiFranza now explains his method of measuring addiction. It starts with the feeling of wanting a cigarette, followed by craving a cigarette, followed by the final stage of addiction: needing a cigarette. Addiction is present as soon as the individual wants a cigarette—that is, during the first and earliest stage. “If something inside you is telling you that you want a cigarette, then you’re addicted,” Dr. DiFranza says.

**ARE YOU HOOKED?**

The video’s next section presents Dr. DiFranza’s “Hooked On Nicotine Checklist” (HONC). This yes or no questionnaire is a great way to determine whether a teen is addicted to smoking. Ten questions appear on screen, and viewers are asked to think about how they would answer. The host states that just one “yes” answer indicates that addiction has begun.

Viewers are told that teens may be more susceptible to addiction due to the fact that the teen brain’s frontal cortex is still developing, making it moldable and easy to change.
This means that nicotine’s impact on the teen brain is very long lasting—if not permanent. According to Dr. DiFranza, people who start smoking in their teens are also more likely to be heavier smokers down the road than those who start smoking in their twenties.

**WHY QUITTING IS SO HARD**
The host tells viewers that only five percent of smokers who try to quit succeed. This section of the video delves into examining why quitting is so difficult. “Cigarette smoking involves more than just an addiction to nicotine,” explains Dr. McClernon. “It’s also a habit that involves a lot of different behaviors—like lighting the cigarette, bringing it to your mouth and inhaling the smoke.” He explains that eventually these small behaviors become associated with the large effects of nicotine, making it hard for smokers to quit these habits.

At Duke University, viewers are taken into a research lab and shown MRI images that analyze the brain activity in smokers as they are presented with visual cues that are commonly associated with smoking. “What this suggests to us is that smokers are very sensitive to these cues when they quit smoking,” Dr. McClernon tells viewers.

The host explains that for people trying to quit, the memories associated with smoking are so powerful that even seeing a cigarette or being in a place one associates with smoking can trigger cravings. “Every time I smell or drink coffee, it’s like a trigger for me to smoke cigarettes,” says Anthony. For Natasha, alcohol and sweet treats trigger her cigarette cravings. Andrea simply craves the feeling of a cigarette in her hand.

Although nicotine is powerfully addictive and it is hard to quit smoking, it is not impossible to kick the tobacco habit. “Another goal of the current research on smoking is to find more effective ways of helping people quit,” the host says.

Dr. McClernon identifies some methods that smokers can use to quit. He recommends avoiding the cues (people, places and things) that a smoker might associate with smoking to avoid triggering cravings. He also suggests finding something else to do with your hands and mouth—easy distractions like chewing gum or eating carrots. The host tells viewers that certain medications, like the nicotine patch or nicotine gum, can help as well.

Dr. DiFranza urges teen smokers to see a doctor for help with ending their addiction. “What we’re trying to do now is to get kids to recognize addiction at the very earliest stages—when they first want to have a cigarette… because that is the time when they are most likely to be able to quit,” he says.

The video ends with the host stating that of the six teen smokers interviewed during production, all regretted starting smoking and only two were able to quit. The two successful quitters, Matt and Andrew, conclude the video with their thoughts. “I haven’t
smoked for three months,” says Matt. “My throat feels better. I don’t have any more pain in my throat. I don’t wake up anymore with a raspy voice.” Andrew’s main reason for quitting was more philosophical “I didn’t like the idea that something was having so much influence over me,” he says. “We’re not naïve. We know what smoking does, and after a while it was like, This is not good. This is not good at all.”