

Addiction Exchange

News from the worlds of clinical practice and research

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Welcome to *Addiction Exchange*, a forum for the exchange of clinical practice and research information among clinicians, scientists, educators, and administrators in the field of addiction. This issue of *Addiction Exchange* is the first of two examining **Tobacco Dependence and Cessation in Children and Adolescents**, written by guest author **Thomas Eissenberg, Ph.D.**, Assistant Professor, Department of Psychology and Institute for Drug and Alcohol Studies at Virginia Commonwealth University. This first issue discusses whether children who use tobacco receive nicotine and examines whether children and adolescents can become dependent on tobacco. The second issue will discuss treatment for tobacco-dependent children and adolescents.

Tobacco abuse is a disorder with a pediatric age of onset. Experimental smoking during adolescence doubles the risk of adult smoking. In fact, nearly three quarters of adult daily smokers in the U.S. became daily smokers before age 20. One important implication of the pediatric onset of tobacco abuse is that the earliest stages of tobacco/nicotine dependence almost always occur in children. For nicotine dependence to occur, tobacco use must result in nicotine delivery to children and adolescent users. Several lines of evidence support the notion that children and adolescents who use tobacco even one or two times can receive pharmacologically active nicotine doses and are at thus at risk for tobacco/nicotine dependence.

Children who use tobacco products receive the drug nicotine: Retrospective surveys, longitudinal studies, and laboratory research with adolescents all suggest that underage tobacco users receive active nicotine doses. For example, in one study researchers interviewed 386 urban public school children in grades 2-10. Of the 183 (47.4%) students who had tried one cigarette, reports of nicotine-like effects after that first cigarette were common: dizziness was reported by 44.0%, headache by 33.3%, and nausea by 23.1% of respondents. So, even a first cigarette may result in nicotine entering the bloodstream and influencing the brain and body. As might be expected, more experience with tobacco leads to more nicotine intake. A longitudinal study of 197 11-14 year-old girls showed a direct positive relationship between cigarette intake and levels of the nicotine metabolite cotinine in saliva: for daily and occasional smokers, both weekly cigarette consumption and salivary cotinine increased over the three-year study. Also, a recent laboratory study of 42 13-18 year-old smokers showed that saliva nicotine levels and heart rate increased markedly after smoking a single cigarette under controlled conditions. Thus, there is a growing understanding that children and adolescents who use tobacco begin to administer the psychoactive drug nicotine very early in their tobacco use careers. Although these data are clear, many children may not realize that even their infrequent use of tobacco includes the administration of a dependence-causing drug.

Children who use tobacco products can become tobacco dependent: Tobacco use and nicotine administration support tobacco/nicotine dependence, leading to increased use and making quitting difficult. Dependence is revealed in adult tobacco users who stop using for several hours: they report withdrawal symptoms such as anxiety, difficulty concentrating, irritability, restlessness, and urges to smoke. These same symptoms are reported by adolescent tobacco users who abstain for some period. For example, 249 10th grade smokers who had tried to quit smoking in the past reported that they experienced withdrawal symptoms such as: needing to smoke, nervousness, restlessness, irritability, hunger, and difficulty concentrating. Similar effects have been observed in adolescent smokeless tobacco users who abstain for some period, indicating that this form of tobacco use also supports dependence in youngsters. Overall, the evidence is clear that, like adults, adolescents become tobacco-dependent. This dependence is likely due in part to nicotine self-administration.

In the U.S., 3000 children use tobacco for the first time every day. Tobacco use in children includes administration of nicotine, a dependence-producing drug. Tobacco dependence makes quitting difficult and thus contributes to the increased rates of cancer, cardiovascular disease, and other health risks associated with tobacco use. Nonetheless, there are several treatment options available to help tobacco users who want to reduce these risks, even if they are children. The next *Addiction Exchange* will discuss treatment of children and adolescents who use tobacco. Interested readers can discuss this topic on the Mid-ATTC's **Addiction Exchange Forum** at <http://www.mid-attc.org>.

Source: Eissenberg, T., and Balster, R.L. (2000). Initial tobacco use episodes in adolescents: current knowledge, future directions. *Drug and Alcohol Dependence*. 59 (Suppl 1), S41-S60.

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