THE DEVELOPMENT AND EVALUATION OF ACES: A WEB-BASED TRAINING TO ENHANCE SCHOOL NURSES' ATTITUDE, SUBJECTIVE NORM, PERCEIVED BEHAVIORAL CONTROL, AND INTENTION TO PROVIDE ADOLESCENT CESSATION SERVICES

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

THE DEVELOPMENT AND EVALUATION OF ACES:
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Presented by Jenna J. Wintemberg

A candidate for the degree of doctor of philosophy,

And hereby certify that in their opinion it is worthy of acceptance.

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ABSTRACT

A substantial amount of research supports the provision of adolescent tobacco cessation services, and school nurses are situated to effectively provide these services in the school-based setting. However, few evidence-based adolescent cessation tools and trainings exist. The Adolescent Cessation in Every School (ACES) toolkit and training were developed by the researcher to fill this gap. The Theory of Planned Behavior (TPB) served as a guide for both the development and the evaluation of ACES. The purpose of this study was to test the efficacy and acceptability of the Adolescent Cessation in Every School (ACES) training video to enhance Missouri school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent tobacco cessation services.

A total of 122 school nurse participants completed the pre-intervention questionnaire (time 0). Participants were then randomized to immediate intervention (II) or waitlist control (WC). The II group received the intervention and post-intervention questionnaire at time 1, while the WC group completed a second pre-intervention questionnaire. The WC group completed the intervention and post-intervention questionnaire at time 2. Each group also received a four-week follow-up questionnaire (time 3 for II, time 4 for WC). Reliability analyses using Cronbach's alpha were conducted for each TPB construct at each timepoint. Dependent sample T-tests analyzed constructs at pre-intervention and at post-intervention and follow-up. Independent T-tests of TPB constructs were conducted by group and timepoint. Point-biserial correlational analyses were conducted for each theory construct scale at pre-intervention, post- intervention, and follow-up. A multiple linear regression model predicting intention at each study

timepoint using TPB constructs and demographics was conducted. Additional multiple linear regression models predicting intention at post-intervention and follow-up using pre-intervention TPB constructs were conducted.

Each scale was found to be reliable at pre-, post-, and following the intervention, with Cronbach's alpha level ranging from 0.66 to 0.90. Attitude, subjective norm, perceived behavioral control, past behavior, and demographic factors accounted for 25- 61% of the variance in nurses' intention to provide cessation depending on the timepoint. There was a significant increase in perceived behavioral control from pre- to post- intervention (22.7 vs 23.8, $p<0.05$) and from pre-intervention and follow-up (22.7 vs 23.5, $p<0.05$). The two groups' TPB construct mean scores were compared at time 1 (post-intervention for II, pre-intervention for WC). Although the two groups did not differ statistically, the II nurses' reported slightly higher mean scores compared to the WC nurses for each construct (attitude: 45.7 vs 44.9; subjective norm: 23.3 vs 22.1; perceived behavioral control: 24.2 vs 22.6; and intention: 9.2 vs 8.8, for II and WC, respectively). Correlational analyses demonstrated that TPB constructs were significantly and positively correlated with intention at pre-, post- and following the intervention. Multiple linear regression models identified predictors of intention. At time 0 and time 1, subjective norm and perceived behavioral control significantly predicted intention. Perceived behavioral control also predicted intention at time 2. Years of service in school nursing, district enrollment, and past behavior predicted intention at time 3. At time 4, subjective norm, perceived behavioral control, and district enrollment predicted intention.

This study provides an understanding of Missouri school nurses' intention to provide adolescent tobacco cessation services and may serve as a guide for developing

other evidence-based health programs. This study indicated that the provision of adolescent tobacco cessation services by Missouri school nurses is uncommon; however, the current study also found moderate levels of intention to provide adolescent tobacco cessation services among school nurses at each timepoint. This lends support for the implementation of adolescent tobacco cessation programs by school nurses in the school setting. The developed TPB-ACES questionnaire works with school nurses and for measuring intention to provide adolescent tobacco cessation services. The provision of tobacco cessation training and tools, such as the ACES toolkit, may effectively enhance school nurses' perceived behavioral control over providing adolescent tobacco cessation services. Providing trainings and evidence-based tools offers tobacco cessation professionals with a new opportunity to partner with school nurses for the purpose of reaching an underserved population – adolescent tobacco users.

CHAPTER I

INTRODUCTION

Statement of the Problem

Tobacco use has both short- and long-term physical health consequences, as well as social consequences for adolescents (Appendix A, page 11). Experimentation with tobacco and addiction to nicotine almost always begins by the time young people graduate from high school (U.S. Department of Health and Human Services [USDHHS], 2012). This early exposure to nicotine and the resulting addiction negatively affects brain development in young people, is associated with engagement in other risky behaviors, and has major implications for future tobacco use (USDHHS, 2014). In Missouri, adolescents use tobacco products at rates that are higher than the national average, with the Missouri high school smoking rate at 11.0% (Warren, Wilson, & Kayani, 2015), which is significantly higher than the national average of 7.0% (University of Michigan, 2015). Use of Electronic Nicotine Delivery Systems (ENDS; aka e-cigarettes) is also much higher among Missouri middle school (7.2%) and high school (22.0%) adolescents, compared to the national average (3.9% and 13.4%, respectively) (Warren et al., 2015). Likewise, smokeless tobacco use in Missouri is higher than the national average. Among high school males in Missouri, smokeless tobacco use is 17.0%, compared to 9.9% nationally (Warren et al., 2015; University of Michigan, 2015). In addition, the rate of middle school (15.5%) and high school (53.0%) adolescents who have ever used tobacco in any form is much higher than the nation's average (7.7% and 24.6%, respectively) (Warren et al., 2015; Centers for Disease Control and Prevention [CDC], 2016a). In the 2015 State of Tobacco Control report, the American Lung Association (ALA, 2015) gave Missouri a grade of

"F" in each of the four categories considered: tobacco prevention, smokefree air, tobacco taxes, and access to cessation services. One strategy to address these difficulties is to direct efforts at the community and institutional levels, within schools for example, to reduce tobacco use among adolescents.

Adolescents spend one third of their waking time in school, and 95% of children in the United States attend school (U.S. Department of Commerce, 2009), making them the ideal setting to reach large numbers of adolescents with health interventions such as tobacco cessation. Cessation services could be incorporated into coordinated school health programs which seek to integrate health-promoting practices into the school-setting (CDC, 2016b). In alignment with the Centers for Disease Control and Prevention's Whole School, Whole Community, Whole Child (WSCC) framework, tobacco cessation could be considered a critical piece of the health services component in this model (CDC, 2016b). The focus of the WSCC model is an ecological approach that is directed at the whole school, with the school in turn drawing its resources and influences from the whole community and serving to address the needs of the whole child. School nurses already prioritize asthma care and oral health, both of which can be improved by the provision of cessation services. Further, while many school districts have tobacco-free policies, these policies alone may not be sufficient to reduce adolescent tobacco use. Policies can fall short of the "gold standard" of tobacco-free policies if the provision of cessation services is not explicitly included (Barbero, Moreland-Russell, Bach, & Cyr, 2013). Schools which provide tobacco cessation for adolescents will see health benefits, and cessation is one of the most cost effective health services available (Missouri Department of Health and Senior Services [MODHSS], 2014).

From 2008 to 2014 the percentage of secondary schools in which the lead health educator received professional development on tobacco use decreased from 34.6% to 18.2%, despite the fact that 54.0% report wanting training in this area (MODHSS, 2014), indicating that few resources and trainings are available and accessible. In Missouri, 17.9% schools report offering cessation services to adolescents and 19.4% report offering referrals for cessation, according to the 2014 Missouri School Health Profiles (MODHSS, 2014). However, when lead school nurses where asked to identify these cessation services during a needs assessment, none were known (Wintemberg & Everett, 2016; poster presentation; Appendix B). This needs assessment revealed that many school nurses did not accurately distinguish between prevention and cessation activities. Prevention activities, rather than cessation, likely accounting for the 2014 Missouri School Health Profiles findings.

School-based adolescent smoking cessation interventions have been shown to have a wide reach, be relatively low cost, and be effective (Mermelstein, 2003). Research finds that adolescent participation in tobacco cessation is increased when interventions take place in a school/community incorporated program setting (Hwang, Yeagley, & Petosa, 2004). Offering services in schools helps eliminate barriers to cessation for adolescents, such as transportation, cost, and ability for follow-up. In addition, the availability of cessation provides a treatment alternative to the usual disciplinary action for adolescents who violate school tobacco-free policies.

School nurses are particularly well situated to provide cessation services in schools and have the credibility necessary to do so (Broussard, 2004). Almost all school districts in Missouri have at least one school nurse, and in most cases, one nurse per school.

School nurses have a unique opportunity to screen for tobacco use during routine health screenings and office visits. Moreover, adolescents who use tobacco have more illnesses and more severe symptoms and therefore may be more likely to visit the school nurse than adolescents who do not use tobacco (USDHHS, 1994; Arday et al., 1995). School nurses report being willing to assist adolescents in quitting tobacco but feel unprepared to do so (Hamilton, O'Connell, & Cross, 2004).

A needs assessment of Missouri school nurses was completed during the spring of 2015 (Wintemberg & Everett, 2016). Key informant interviews, a survey of district lead nurses, and a focus group at the Missouri Association of School Nurses conference were conducted. Results revealed that school nurses reported that they do not receive any training on tobacco cessation during nursing school, nor have accessible, evidence-based tobacco cessation resources. Nurses reported concern about adolescent tobacco use, a willingness to intervene, and the need for tools and skills training in adolescent cessation. Barriers to receiving training include cost, a lack of time off work for professional development, and travel restrictions.

As a result of the information collected during the needs assessment and an identified gap in evidence-based resources for the provision adolescent tobacco cessation, the Adolescent Cessation in Every School (ACES) toolkit was developed by the researcher in the fall of 2015 (Appendix A). ACES was developed from evidence-based literature and best practices for adolescent tobacco cessation and was tailored to Missouri populations. It has been reviewed by experts in tobacco cessation, adolescent health, and school nursing (Appendix A, page 3). The ACES toolkit is available in printed and electronic form for professionals who work with adolescents, especially in a school-based setting. Many of the

tools provided in ACES focus on helping young people quit tobacco through behavioral interventions (e.g., motivational interviewing, completing a quit plan, developing coping skills). The purpose of the ACES toolkit is to provide school nurses and professionals with effective and evidence-based resources to assist adolescent tobacco users in quitting.

For the current study, content from the ACES toolkit was developed into a web-based video training and made accessible to Missouri school nurses. It is expected that making ACES available in an online video training format will reduce the barriers that school nurses face in participating in trainings and providing adolescent tobacco cessation services in the school setting.

Theoretical Framework

The Theory of Planned Behavior (TPB) provides a framework for the evaluation of the ACES training. This theory proposes three independent determinants of behavioral intention. The first is attitude toward the behavior and indicates to the degree to which a person has a favorable or unfavorable appraisal of the behavior in question (Ajzen, 1991). The second predictor is subjective norm and refers to the perceived social pressure to perform or not to perform the behavior. The third determinant is perceived behavioral control. Perceived behavioral control is a person's perception of the ease or difficulty of performing the behavior. In other words, people's behaviors are strongly influenced by their confidence in their ability to perform them. According to this theory, perceived behavioral control can often be used as a substitute for a measure of actual control. To the extent that perceived control is realistic, it can be used to predict the probability of a successful behavioral attempt (Ajzen, 1985).

Generally, the more favorable the attitude and subjective norm with respect to a behavior and the greater the perceived behavioral control, the stronger an individual's intention is to perform the behavior (Ajzen, 1991). According to Ajzen, in some applications it may be found that only attitude has a significant impact on intention, in others that attitude and perceived behavioral control are sufficient to account for intentions, and in still others that all three predictors make independent contributions. In the TPB, intention is assumed to be the immediate antecedent of behavior (Ajzen, 2002). According to this theory, intention to perform a behavior predicts actual behaviors (Ajzen, 1991). Intention can be thought of as indicators of how hard people are willing to try and how much of an effort they will put forth in order to perform a behavior. In general, the stronger the intention to engage in a behavior, the more likely performance is. Behavioral intention, together with perceived behavioral control, can directly predict behavior. For example, even if two school nurses have equally strong intention to help adolescents quit tobacco and both try to do so, the nurse who is confident that she can master cessation skills and competencies is more likely to persevere than is the nurse who doubts her ability. Attitude toward the behavior, subjective norm with respect to the behavior, and perceived control over the behavior are usually found to predict behavioral intention with a high degree of accuracy (Ajzen, 1991). In turn, this intention, in combination with perceived behavioral control, can account for a considerable proportion of variance in behavior.

The TPB was chosen as the framework for the evaluation of the ACES training because of its demonstrated effectiveness in predicting individual-level health behaviors and health care professionals' adoption of specific programs and practices. The training

was designed with an emphasis on changing participants' attitude, subjective norm, and perceived behavioral control regarding the provision of adolescent tobacco cessation. By altering attitude, subjective norm, and perceived behavioral control (short-term outcomes), it is expected that behavioral intention (intermediate outcome) will also be altered, and as demonstrated by the TPB, intention precedes behavior (long-term outcomes; e.g., a school nurse providing cessation services).

Purpose of the Study

The purpose of this study is to test the efficacy and acceptability of the Adolescent Cessation in Every School (ACES) video training to enhance Missouri school nurses' attitude, subjective norm, and perceived behavioral control to provide adolescent tobacco cessation services. Consistent with identified barriers in the needs assessment and in the literature, the ACES is designed to: impart specific knowledge about tobacco cessation best practices, reduce barriers to providing services, alter norms about the importance of evidence-based cessation services for adolescents, enhance communications on the value of cessation, and increase self-efficacy in helping adolescents quit tobacco. This is expected to enhance school nurses' intended provision of tobacco cessation activities and services. As described in more detail in the literature review, ACES conveys this information through didactic materials, training in the use of specific cessation tools, and accompanying links to selected external resources.

It is hypothesized that the ACES training will produce meaningful changes in school nurses' attitude, subjective norm, and perceived behavioral control regarding the provision of evidence-based adolescent tobacco cessation services and increase

nurses' behavioral intention to provide these services. The current study will also test the utility of the Theory of Planned Behavior in predicting behavioral intention with this specific population – Missouri school nurses. Further, school nurses' satisfaction and the acceptability of the online training will be examined. The research questions and corresponding hypotheses listed below will be assessed for each of the following outcome measures: (1) past year behaviors regarding the provision of adolescent cessation, (2) attitude about providing cessation, (3) subjective norm about providing cessation, (4) perceived behavioral control over providing cessation, (5) intention to provide adolescent tobacco cessation in the upcoming year, (6) acceptability of the ACES training, and (7) satisfaction with the ACES training. Baseline, or before the intervention, is defined as time 0, following the intervention for the immediate intervention (II) group is defined as time 1, as is the second pre-intervention questionnaire completion for the wait-list control (WC) group, following the intervention for the wait-list control (WC) group is defined as time 2, four week follow-up for II is defined as time 3, and four week follow-up for WC is defined as time 4.

Research Questions

1. For each theory construct measured, do differences exist between the WC and II groups at time 1 (II at post-intervention, WC at pre-intervention)?
2. Do the constructs of attitude, subjective norm, and perceived behavioral control correlate with intention at pre-intervention (time 0), post-intervention (II at time 1, WC at time 2), or follow-up (II at time 3, WC at time 4)?
3. Do the constructs of attitude, subjective norm, and perceived behavioral control

predict nurses' intention at each timepoint when controlling for demographic variables?

4. At pre-intervention (time 0), do the constructs of attitude, subjective norm, and perceived behavioral control predict nurses' intention at post-intervention (II at time 1, WC at time 2) when controlling for demographic variables?
5. At pre-intervention (time 0), do the constructs of attitude, subjective norm, and perceived behavioral control predict nurses' intention at follow up (II at time 3, WC at time 4) when controlling for demographic variables?

Hypotheses

1. It is hypothesized that differences will exist between the WC and II groups at time 1 (II at post-intervention, WC at pre-intervention) for each construct measured.
2. It is hypothesized that the constructs of attitude, subjective norm, and perceived behavioral control will correlate with intention at pre-intervention (time 0), post-intervention (II at time 1, WC at time 2), and follow-up (II at time 3, WC at time 4).
3. It is hypothesized that the constructs of attitude, subjective norm, and perceived behavioral control predict nurses' intention at each timepoint when controlling for demographic variables.
4. It is hypothesized that the constructs of attitude, subjective norm, and perceived behavioral control at pre-intervention (time 0) will predict nurses' intention at post-intervention (II at time 1, WC at time 2) when controlling for demographic variables.
5. It is hypothesized that the constructs of attitude, subjective norm, and perceived behavioral control at pre-intervention (time 0) will predict nurses' intention at follow-up (II at time 3, WC at time 4) when controlling for demographic variables.

Delimitations

The participants who will take part in the current study are limited to Missouri school nurses. Participants may or may not have had prior experience with tobacco cessation training and services or web-based trainings. Both groups, intervention and control, will be individuals who self-select to participate in the program. The ACES training intervention is delivered online and can be completed in a self-paced format and takes thirty minutes to complete.

Strengths of the Study

A strength of the present study is the unique focus on training school nurses who have great potential to intervene and address adolescent tobacco use. To the author's knowledge, this is the first intervention which provides a web-based adolescent tobacco cessation training for school nurses. Another strength of the study is its design using the efficacious and well-research Theory of Planned Behavior framework. Finally, this study is also strengthened by the experimental methodology with participants randomized to the immediate intervention or wait-list control group to allow for between-group and within-group comparisons to be made.

Significance of the Study

Reducing the use of tobacco products by adolescents is a key Healthy People 2020 objective (USDHHS, 2016). Reducing the high rates of adolescent tobacco use in Missouri will likely require a multifaceted approach including tobacco control policies, higher taxes, prevention, and cessation services. To begin to address this problem, the Missouri

Department of Health and Senior Services' Comprehensive Tobacco Control Program will be working with local health departments and school districts over the next five years to assure districts have tobacco-free policies that are comprehensive, which includes the provision of cessation services. The needs assessment of Missouri school nurses identified adolescent tobacco cessation as an area of importance and one that nurses are willing to address but feel unprepared for (Wintemberg & Everett, 2015). The ACES training will provide evidence-based resources and tools that are presently lacking and for which there is a demonstrated need. The current intervention attempts to fill this gap by increasing school nurses' behavioral intention (through the TPB constructs: attitude, subjective norm, and perceived behavioral control) to engage in cessation activities, with the expectation that this in turn will increase the actual provision of cessation by school nurses and a reduction in Missouri adolescents' tobacco use.

Currently, with the exception of a few studies, the field of school nursing is limited in research evaluating school-based, nurse-led cessation interventions. In addition, little is known about the efficacy and acceptability of web-based trainings for school nurses, and no online trainings for school nurse-led cessation were identified. The evaluation of the effectiveness and acceptability of the web-based ACES training addresses this paucity in the literature. The current study will assess the acceptability of the ACES training and its efficacy in: 1) improving school nurses' attitude, subjective norm, and perceived behavioral control regarding the provision of adolescent cessation services; 2) increasing behavioral intention to provide adolescent cessation services; and 3) adding to the fields of school nursing and adolescent tobacco cessation.

CHAPTER II

LITERATURE REVIEW

Adolescent Tobacco Use

Every day, more than 2,800 U.S. adolescents under age 18 try their first cigarette, and an additional 700 adolescents become new daily smokers (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). Most kids try smoking for the first time between sixth and seventh grade, or ages 11-13 years old (Johnston, O'Malley, Bachman, & Schulenberg, 2013). Nearly one in ten adolescents has smoked at least one whole cigarette before age 13 years (Kann et al., 2014). By the 10th grade, one out of every five adolescents has tried smoking, and by the 12th grade, one out of three has tried smoking (University of Michigan, 2014). More than one-third of all adolescent who ever try smoking a cigarette will become daily smokers before they leave high school (CDC, 1998). In fact, ninety percent of adult smokers began smoking before age 18, and two out of three adult smokers report having become daily smokers before age 19 (USDHSS, 1994). Compounding the problem, more than 250,000 adolescents who had never smoked a cigarette reported using an electronic nicotine delivery system (ENDS; aka e-cigarette) in 2013 (CDC, 2014a), and there is growing concern that initiation of these products is another pathway to nicotine addiction. It should also be noted that tobacco use is often an indicator of engagement in other risky behaviors. Research has shown that adolescent tobacco users are more likely to use alcohol and illegal drugs than are non-tobacco users (USDHHS, 1999; USDHHS 1994). Tobacco users are also more likely to: get into fights, carry weapons, attempt suicide, suffer from mental health problems such as depression, and engage in high-risk sexual behaviors (American Cancer Society [ACS], 2015).

Adolescent Tobacco Use in Missouri

As demonstrated by the high rates of adolescent tobacco use, when it comes to tobacco control efforts Missouri is falling behind. In 2015, the CDC recommended that Missouri spend $72,900,000 on tobacco control programs (namely, prevention and cessation), and the state reported spending only $70,788, or 0.001%, of the recommended level (ALA, 2015). Another challenge in Missouri is the lack of a comprehensive smokefree indoor air law, which would prohibit indoor smoking in all workplaces, including bars and restaurants. Currently, Missouri is one of 20 states without a comprehensive smokefree indoor air law (Americans for Non-Smokers Rights Foundation [ANR], 2016). The main purpose of smokefree laws and policies is to protect nonsmokers from secondhand smoke; however, research shows that these laws also have the added benefit of increasing overall cessation (USDHSS, 2006) and reducing smoking initiation among adolescents (Siegel, Albers, Cheng, Hamilton, & Biener, 2008). Moreover, Missouri ranks last with its tobacco tax, at $0.17 per pack of cigarettes, compared to the national average of $1.69 (Boonn, 2017). Young people are especially sensitive to the price of tobacco products, and substantial tax increases have been shown to deter adolescent smoking (Chaloupka & Parcula, 1998; Tauras, O'Malley, & Johnston, 2001). Many economic studies have documented that increases in the cigarette tax or overall price reduce adult and adolescent smoking (Chaloupka, 1999; Tauras, 2004; Emery, White & Pierce, 2001; Harris & Chan, 1999; Evans & Huang, 1999). For every 10% increase in the price of cigarettes, there is a 6-7% reduction in the number of adolescents who smoke (Chaloupka, 1999). Having the lowest tobacco tax in the nation likely contributes to the high rates of adolescent smoking in Missouri. Taken together,

the lack of prevention funding, the lack of a comprehensive statewide smokefree law, and the lowest in the nation tobacco tax are likely responsible for the high prevalence of adolescent tobacco use in Missouri (ALA, 2015).

Nicotine Addiction and Intention to Quit Among Adolescents

Nicotine addiction can occur as quickly as a few days after experimental smoking (DiFranza et al., 2000). The adolescent body and brain and still developing, making adolescents especially vulnerable to addiction (USDHHS, 2012). Nicotine has lasting and adverse consequences for the brain (USDHHS, 2012). The younger a person is when he or she begins using tobacco, the higher the risk that this adolescent will become a daily tobacco user and be less likely to successfully quit (Khuder, Daval, & Mutgi, 1999). Symptoms of addiction, such as strong urges to use tobacco, irritability, and anxiety can appear in adolescents within just weeks or days of occasional tobacco use, even before daily use is established (DiFranza et al., 2000). Not only is tobacco physiologically addicting due to the drug nicotine, the process of using tobacco also becomes a learned habit. These learned behaviors combine with nicotine to make a highly addictive practice. In fact, when health care professionals rank the addictiveness of drugs, nicotine tops the list – higher than methamphetamine and heroin (Perrine, 1996).

Adolescents underestimate the addictiveness of nicotine (Fiore et al., 2008). Compared to nonsmokers, adolescent smokers (occasional and daily) are more likely to believe that they can quit at any time (Fiore et al., 2008). A survey of 11-19 year-olds found that 82% of smokers are thinking about quitting (Fiore et al., 2008), and 48-77% of adolescent smokers have made a serious quit attempt (CDC, 2014b; USDHHS, 2012;

Hollis, Polen, Lichtenstein, & Whitlock, 2003). Most of these attempts fail, and 75% of these young people will continue smoking into adulthood despite their desire to quit (USDHHS, 2012). In a longitudinal study of adolescent novice smokers it was found that the first serious desire to quit smoking was only 1.5 months after smoking initiation, and the first serious quit attempt occurred at 2.5 months from initiation (O'Loughlin, Gervais, Dugas, & Meshefedjian, 2009). A lack of confidence about quitting followed at 18.4 months and awareness of the difficulty of quitting occurred at 32.2 months. Not surprisingly, adolescent tobacco users often make unassisted quit attempts and do not rely on best practices for cessation when doing so. In fact, only 4% of adolescent smokers successfully quit each year (Zhu, Sun, Billings, Choi, & Malarcher, 1990; Engels, Knibbe, de Vries, & Drop, 1998), which is a higher rate of failed quit attempts than seen among adult smokers (CDC, 2006).

Approaches to Adolescent Tobacco Cessation

Research finds that adolescent smoking cessation programs, compared with control conditions, increase the probability of quitting by approximately 46% (Sussman, Sun, & Dent, 2006; McCuller, Sussman, Wapner, Dent, & Weiss, 2006; Sussman, 2002). Despite this, quit attempts by young people are often unplanned and unassisted (CDC, 2006). A national focus group comprised of adolescents found that many young smokers did not consider tobacco use urgent or intense enough for professional help (Price, Jordan, & Dake, 2007). A reason for the lack of cessation success among adolescent may be how they are trying to quit. Numerous cessation programs have been developed, yet a study found that the perceptions of cessation programs among adolescents were

nonexistent or negative (Leatherdale & McDonald, 2005). Most adolescent smokers report that they would rather try to quit smoking on their own (Leatherdale & McDonald, 2005); however, this tactic is the least effective cessation approach (Stanton, Lowe, & Gillespie 1996). Without assistance, three out of four adolescent smokers will continue the habit into adulthood (CDC, 2014b). Therefore, it is critical to educate those who work with adolescents about what cessation programming is, what it is not, why it is needed, how it can help, and where it is offered.

A meta-analysis of adolescent tobacco use cessation trials and studies of self-initiated quitting identified important variables in the adolescent quitting process, including: structuring the context of programming for adolescents, motivating quit attempts and reducing ambivalence about quitting, and making programs as enjoyable as possible (Sussman, 2002). Another study surveyed current and former adolescent smokers about what they perceived would be helpful or what had helped them quit smoking (Pingree et al., 2009). Results showed former and current adolescent smokers in the preparation stage of change believed interpersonal support was an important factor in quitting. Adolescents in the contemplation stage worried about obstacles and internal issues. Current smokers not thinking about quitting were focused on external rewards.

Additional research finds that to increase utilization, smoking cessation programs should be made available to adolescents in a variety of settings (Donovan, 2000). Moreover, cessation programs need to address other tobacco and nicotine products in addition to cigarettes (Backinger, Fagan, Matthews, & Grana, 2003). Similar to older and daily adolescent smokers, young adolescents and non-daily smokers make regular cessation attempts and should be included in cessation programs along with older

adolescents and adolescent daily smokers (Bancej, O'Loughlin, Platt, Paradis, & Gervais, 2007).

Provision of Cessation by School Nurses

Professionals who work with adolescents strive to make schools safe and healthy environments that promote learning, healthy behaviors, and overall wellbeing. Young people have to be healthy in order to be effective learners and grow into successful adults. In the school setting, much time is devoted to educating and intervening with adolescents who are participating in risky behaviors such as alcohol use, marijuana, methamphetamine and other substance use, and it is appropriate to address tobacco use alongside these other substances. Although tobacco use is legal for adults, it is the only product that, if used as intended, will ultimately kill half of its users (World Health Organization [WHO], 2015).

To date, school efforts to reduce adolescent tobacco use have focused largely on classroom activities aimed at preventing initiation. Teachers (often health or physical education teachers) tend to implement the majority of smoking prevention education in schools, with nurses playing a smaller complementary role, if any (Bruvold, 1993). However, reports show that adolescents view school nurses as non-authoritarian, non-judgmental, and credible (Klein & Sadowski, 1990), and find that adolescents believe school nurses are more likely to keep information confidential than teachers (Bradley, 1997; Lightfoot & Bines, 1997). Moreover, research suggests that schools which provide counseling and education for adolescents caught using tobacco, rather than discipline-only approaches, may be more effective (Hamilton, Cross, Lower, Resnicow, & Williams,

2003). In addition, delivery of cessation within the school setting was one of the characteristics of successful programs in a meta-analysis of adolescent smoking cessation trials (Sussman, Sun, & Dent, 2006).

As the primary health care professional in the school setting, school nurses are exceptionally positioned to deliver cessation because they have and credibility to offer health-related assistance (Broussard, 2004; Pbert et al., 2011), can provide ongoing support, and are easily accessed by adolescents. Despite the tremendous opportunity that school nurses have in addressing tobacco use among adolescents, only a few studies have evaluated the feasibility and efficacy of school nurses delivering tobacco cessation treatment to adolescents. Given the role of school nurses as key health care providers and being perceived as the "approachable" adults in the school setting, they are in a unique position to identify adolescent tobacco users and provide cessation (Pbert et al., 2006). Adolescent cessation interventions enable school nurses to provide relevant health promotion messages to adolescents who use tobacco, rather than the traditional and sometimes poorly received "don't smoke" messages.

The American Medical Association developed and evaluated a brief (10-15 minute) tobacco intervention delivered by nurse practitioners in a one-on-one format during four office visits in school-based health centers (Lamkin, Davis, & Kamen, 1998). During these visits the nurse assisted the adolescents (N=52) in learning coping strategies, increasing awareness of his/her tobacco use, and establishing a quit date. One month after the completion of the intervention, 29% of the participants had set a quit date and made a quit attempt, and 52% had cut down their tobacco use. These findings suggest that a brief intervention conducted by school healthcare providers is feasible and potentially effective.

An Australian study conducted from 1999-2001 found that adolescents report an interest in smoking cessation programs conducted by non-teaching personnel (Hamilton, O'Connell, & Cross, 2004). The Smoking Cessation for Youth Project was a randomized control trial evaluating a school-based smoking harm-reduction intervention in Perth, Western Australia. School nurses (N=14) reported implementing a range of strategies to address cessation with adolescents, such as counseling, providing advice, using visual aids, and using scare tactics. All nurses reported being unsure of the effectiveness of the strategies they were using.

All nurses in this study recognized that they have opportunities to help adolescents who smoke and reported a willingness to increase or enhance their involvement in these efforts (Hamilton, O'Connell, & Cross, 2004). Time to adequately implement the cessation program was a barrier identified by nurses in this study. The nurses emphasized that adolescent smoking at school should be considered as a health issue, not simply one of discipline and that this would assist in developing closer nurse-adolescent relationships. The results of this study indicate that nurses are willing to expand their role in smoking cessation to incorporate direct adolescent intervention.

This study also found that one of the most important factors determining nurses' willingness to participate in smoking cessation efforts within the school was their belief that adolescents are comfortable accepting assistance from the school nurse (Hamilton, O'Connell, & Cross, 2004). The perceived and apparent lack of adolescent smoking cessation support materials was a barrier for school nurses wishing to help adolescent tobacco users. This feasibility study proposes that providing school nurses with relevant skills and resources may increase their involvement in school cessation programs. Nurses

in this study viewed smoking reduction and cessation as a high priority in secondary schools. Hamilton et al. (2004) concluded that school nurses require time, suitable materials, training, and other support from within the school and community to achieve this purpose.

A review of the literature on adolescent smoking cessation and school nurses conducted by Fritz in 2000 identified only one cessation intervention (Lamkin, Davis, & Kamen, 1998) that fit the review criteria. Fritz concluded that nurses can assist in the recruitment of adolescents into smoking cessation programs within schools or in the community and that school nurses should advocate for these programs. Fritz also postulated that school nurses should incorporate smoking cessation into their goal planning for their schools and evaluate their success.

Pbert and colleagues (2006) conducted a randomized controlled trial of a school nurse-delivered adolescent smoking cessation intervention in 71 Massachusetts high schools. A four-session intervention based on the 5As model (Ask, Advise, Assess, Assist, and Arrange) and cognitive-behavioral principles tailored to adolescents was developed and evaluated for feasibility and efficacy in improving abstinence rates among adolescent smokers interested in quitting. Adolescents interested in participating in the study were instructed to contact the school nurse. School nurses also screened for tobacco use and invited adolescents to participate in the study during health-related encounters. School nurses from the intervention schools were trained on the 5As intervention.

School nurses reported that the time to conduct the cessation sessions at each visit ranged from 15-19 minutes on average (Pbert et al., 2006). The greatest barriers reported by nurses to conducting the cessation intervention were competing demands on the

nurses' time. Both nurses and adolescents found the intervention to be acceptable. The majority of the adolescents who received the cessation intervention reported being very comfortable discussing smoking cessation with the school nurse (71%) and felt the nurse understood how they felt about smoking (64%).

Thirty-day self-reported abstinence rates were significantly greater in adolescents in the intervention (N=571) compared to control condition (N=577) at 6 weeks and 3 months. Adolescents in the intervention schools were 8 times more likely to quit compared to adolescents in the control schools at 6 weeks and were 6 times more likely to be quit at 3 months. The results of this study suggest that a four-session smoking cessation intervention can be feasibly delivered by school nurses in the school health setting to adolescents interested in quitting and increases self-reported short-term abstinence rates. The nurses in this study were able to implement the intervention with a high degree of fidelity and the adolescents found the school nurse to be an acceptable provider of smoking cessation counseling (Pbert et al., 2006). Further, this study found that a smoking cessation intervention is feasible to deliver by school nurses in the school health office and is acceptable to adolescents. According to the authors, by offering the intervention in the school adolescents had easy access to the cessation venue, and school nurses were available to the adolescents between sessions to provide support and assistance throughout the adolescent's quit attempt.

Another school nurse-delivered cessation intervention, Calling It Quits, consisted of four weekly one-on-one sessions delivered during a one month time period in school health clinics (Pbert et al., 2011). In the intervention condition (N=486), a cognitive-behavioral approach to develop health knowledge, positive outcome expectations, and

self-efficacy to stop smoking was used. A patient-centered counseling approach was used in which school nurses asked open-ended questions to elicit the adolescent's thoughts and ideas, engage them actively in discussion, and allow them to determine the course of action to take, while tailoring the intervention to their individual needs. Adolescents in the control condition (N=582) also received four weekly visits with the school nurse during which the nurse delivered information pamphlets, checked smoking status and efforts at quitting, and asked if the adolescent had any questions. Sessions were conducted during the school day.

School nurses were able to integrate the delivery of the intervention into their daily routine without added expense; therefore there were no costs associated with the nurses delivering the intervention (Pbert et al., 2011). The majority of adolescents in the intervention group reported that the school nurse was very helpful in their efforts to quit, and this was higher in the intervention group at 3 months (78% vs 60%, respectively) and at 12 months (72% vs 60%, respectively) compared to the control condition. The majority of adolescents in the intervention condition also reported that they were very comfortable in discussing their smoking with the nurse (70%). Anecdotally, the nurses reported that adolescents in both conditions frequently checked in with the nurse regarding their smoking status, challenges, and successes. Intervention condition participants were almost twice as likely to be abstinent at 3 months compared to control participants, although no differences were seen at 12 months. The findings from this study demonstrate the feasibility and short-term effectiveness of a school nurse-delivered smoking cessation intervention.

Other School-Based Cessation Programs

The American Lung Association's Not-On-Tobacco (N-O-T) program was the most widely used school-based adolescent cessation intervention identified in the literature. N-O-T has been evaluated as an effective program and may currently be the most frequently-used adolescent smoking cessation program in the nation (Dino, Horn, Abdulkadri, Kalsekar, & Branstetter, 2008). N-O-T is an intensive, 10 week, school- based cessation curriculum based on the social cognitive theory (ALA, 2016). The American Lung Association reports that of the 12,000 young people participating in the N-O-T program nationally, approximately 90% have either quit smoking or cut back. One study identified in the literature found that N-O-T was effective for adolescent smokers, including those highly dependent to nicotine (Horn, Fernandes, Dino, Massey, & Kalsekar, 2003), and another found that the N-O-T program was effective for adolescents regardless of their stage of change at baseline (Dino, Kamal, Horn, Kalsekar, & Fernandes, 2004). N-O-T studies show intent-to-treat quit rates between 15% and 19% - among the highest reported in the literature - and Dino et al. (2008) concluded that N-O-T is highly cost effective, potentially more cost-effective than adult tobacco cessation.

School-based cessation interventions might be improved if programs are targeted to the adolescents that are most likely to use them, if more adolescents can be made aware of existing programs, and if the benefits of participating in such programs can be more adequately conveyed to adolescent smokers (Leatherdale, 2006). A study examining predictors of school-based smoking cessation program attendance found that offering programs during school hours rather than after school is effective at increasing attendance (Turner, Mermelstein, Berbaum, & Veldhuis, 2004), and this approach should be utilized

to achieve optimal outcomes. Adolescents in vocational schools, a particularly vulnerable population, also benefit from cessation programs (Minary et al., 2013). With regards to parents, a survey study found that the majority of parents are supportive of school-based cessation and want to be included in the process of implementing these programs (Wyman, Price, Jordan, Dake, & Tellijohann, 2006). Knowing that parents are supportive of school-based cessation programs may encourage administrators to adopt these services.

Adolescent Cessation Training Components

Behavioral interventions increase the chances of adolescent tobacco users achieving successful cessation (Curry, Mermelstein, & Sporer, 2009). Even minimal behavioral interventions (i.e., one brief counseling session and self-help materials) lead to positive short-term increases in intention to quit for adolescent smokers (Paludan-Muller, Kok, Dalum, & Engholm 2012). However, each additional behavioral intervention session increases an adolescent's readiness to quit and self-efficacy (Patten et al., 2008). Higher quit rates are found in programs consisting of at least five quit sessions with behavioral components (Sussman, Sun, & Dent, 2006).

The 5As (Ask, Advise, Assess, Assist, and Arrange) are a brief, evidence-based smoking cessation intervention developed by the Public Health Service that take less than three minutes to complete (Fiore et al., 2008). Although originally created for use with adult tobacco users, the American Academy of Pediatrics (AAP) endorses the use of the 5As approach with adolescent tobacco users (Sims, 2009). Further, the AAP suggests the addition of a sixth 'A' – Anticipate – when working with adolescents. 'Anticipate' accounts for the developmental aspects of working with adolescents and the need to provide

anticipatory guidance during cessation (Sims, 2009). Two studies previously discussed have shown the use of the 5As to be effective in helping young people quit tobacco (Pbert et al., 2011; Pbert et al., 2006).

Interventions utilizing the Transtheoretical Model (TTM) of Change, also known as the Stages of Change, are effective in adolescent smoking cessation (Robinson & Vail, 2012). The meta-analysis of adolescent cessation by Sussman and colleagues (2006) found a 46% increase in the probability of quitting for treatment approaches that employed the TTM in comparison with control conditions. The TTM attempts to utilize existing motivation to make a positive health behavior change by moving the individual through the early stages of change (precontemplation, contemplation) into the later stages where action takes place (preparation, action, maintenance) and is frequently used in tobacco cessation studies (Robinson & Vail, 2012). The TTM approach to cessation often incorporates Motivational Interviewing (MI) as the process by which a person is assisted in moving from the earlier stages of change to the later stages.

MI is a directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence (Rollnick & Miller, 1995). MI helps people explore and resolve their uncertainties about changing a behavior, such as quitting tobacco. When thinking about trying to quit tobacco, an adolescent will experience many moments of doubt. However, MI can reduce an adolescent's resistance to quitting tobacco by increasing awareness that tobacco use is a problem, strengthening motivation to quit, and increasing confidence in one's ability to quit. MI avoids an aggressive or confrontational approach and instead steers people towards choosing to change their behavior and enhances their self-confidence to do so (Lai, Cahill, Qin, & Tang, 2011).

Interventions that incorporate motivational interviewing (MI) increase the likelihood of smoking abstinence for adolescents (Heckman, Egleston, & Hoffman, 2010). MI may best fit within a multicomponent cessation treatment approach in which behavior change skills can support and promote behavior change decisions (Asfar et al., 2010; Colby et al., 2012).

More broadly, cognitive-behavioral interventions are also effective in increasing adolescent cessation (McDonald, Colwell, Backinger, Husten, & Maule, 2003). Cognitive Behavioral Therapy (CBT) approaches to cessation should be combined with contingency management (i.e., rewarding positive behaviors) for optional outcomes (Cavallo et al., 2007). Trials that included some form of motivational enhancement (such as CBT) were found to be moderately successful (Stanton & Grimshaw, 2013). Higher quit rates are found in programs that include motivation enhancement, cognitive-behavioral techniques, and social influence approaches (Sussman, Sun, & Dent, 2006). Cessation programs that utilize motivation enhancement and contingency-based reinforcement improve quit rates for adolescents (Sussman, 2002).

Reductions in adolescent tobacco use are also increased by the use of life skills interventions (Hwang, Yeagley, & Petosa, 2004). Life skills trainings (covering topics such as self-confidence, values clarification, or social skills) are effective approaches to the prevention of adolescent initiation of tobacco and may also benefit adolescents in their attempt to quit tobacco. A review of adolescent cessation programs concluded that an emphasis on the immediate consequences of tobacco use and the instruction in coping strategies/life skills may lead to successful cessation programs for this age group (Sussman, Lichtman, Ritt, & Pallonen, 1999). Another review made similar conclusions; programs for adolescents should provide ongoing support during the acute withdrawal period and

teach adolescents both social and life skills (Sussman, 2002).

Efficaciousness and Acceptability of Online Trainings for Nurses

Although not specific to school nurses, a study by Sweeney, Saarmann, Flagg, and Seidman (2008) identified factors associated with successful online continuing education programs for registered nurses. Registered nurses (N=246) completed asynchronous online training in order to receive continuing education units, and the number of trainings completed were examined by participant characteristics. They found that nurses completed similar numbers of trainings regardless of age, educational preparation, experience, or practice setting, suggesting that online trainings are acceptable to nurses from a variety of backgrounds and settings.

Three studies evaluating the use of online trainings with school nurses were identified in the literature. Steele and colleagues (2013) conducted a study to assess the efficacy and acceptability of a web-based training (Child Health Matters, CHM) designed to improve school nurses' communications with families about child weight-related health issues. A randomized wait-list control design was used. Participants were a nationally representative sample of school nurses from 17 states with 263 nurses assigned to the immediate treatment group and 263 nurses assigned to the wait-list group, for a total N of 526. Pre-intervention, post-intervention, and follow-up assessments of knowledge, barriers to providing obesity treatment, and intended practices were conducted. Results indicated that, relative to the wait-list group, immediate treatment nurses had significant increases in knowledge and decreases in perceived barriers. The immediate treatment nurses also had significantly greater intention to assess physical activity and

to recommend dietary changes and physical activity compared to the wait-list nurses. Wait-list nurses demonstrated significant within-group improvements after completing the training. Nurses reported a high degree of satisfaction with CHM, suggesting that web-based trainings can produce changes in nurses' knowledge, perceived barriers, and intended practices with regard to weight-related health care.

Another study evaluated the effectiveness of a computer-assisted emergency preparedness course for school nurses using an experimental after-only post-intervention design (Elgie, Sapien, Fullerton, & Moore, 2010). Participants were a convenience sample of school nurses from New Mexico (N=42) that were randomly assigned to the intervention or control group. School nurses in the intervention group completed 15 online emergency preparedness training modules followed by post-interventions, and school nurses in the control group completed the post-interventions without taking the training modules. The emergency preparedness course utilized computer-assisted instruction and streamed media lessons through the internet. The content covered responding to pediatric injuries in school. Post-interventions measured emergency preparedness with written exams, confidence surveys, and skills performance in videotaped scenarios. The intervention group nurses scored significantly higher in tests of knowledge and skills than control group participants; however, confidence scores were not significantly different. The authors conclude that online training modules are a valuable resource for improving school nurses' emergency preparedness knowledge and skills.

A quasi-experimental repeated-measures thesis study examined the impact of a web-based MEDLINEplus training tutorial on computer and Type 1 diabetes knowledge, self-efficacy, and internet search skills among school nurses (N=34) in southeast Texas

(Clifton, 2001). The training provided definitions, directions to search Google for the MEDLINEplus web site, and examples to search specific health problems related to Type 1 diabetes. Participants showed a significant gain in computer knowledge and diabetes knowledge when using the MEDLINEplus training to learn to search for information. There was also a significant gain in self-efficacy as a result of the training. This study found that online trainings can help nurses develop skills that will keep them up to date on new medical information.

Theory of Planned Behavior

Much support has emerged for the Theory of Planned Behavior. The theory has been found to successfully predict a variety of health behaviors such as: smoking (Topa & Moriano, 2010), seat belt use (Ali, Haidar, Ali, & Maryam, 2011), HPV vaccination (Gerend & Shepherd, 2012), routine dental checkups (Anderson, Noar, & Rogers, 2013), physical activity and diet (McEachan, Conner, Taylor, & Lawton, 2011).

TPB has also been shown to predict intention of health care professionals. For example, an exploratory cross-sectional survey study of health professionals' (nurses, physicians, and allied health professionals; N=72) intention to make referrals to cancer patients for psychosocial support found that TPB variables explained 51% of the variance in intention to make a referral (Kam, Knott, Wilson, & Chambers, 2012). Similarly, a descriptive cross-sectional survey study of the utility of the TPB to predict health professional students' (pharmacy, nursing, and medicine; N=65) behavioral intention in relation to medication safety and collaborative practice found that attitude, subjective norm, and perceived control accounted for between 30-46% of the variance in behavioral

intention (Lapkin, Levett-Jones, & Gilligan, 2015).

A cross-sectional web-based survey was conducted in Finnish healthcare organizations (physicians, nurses, and other professionals; N=806) to determine indicators of intention to use clinical guidelines in their decision-making on patient care (Kortteisto, Kaila, Komulainen, Mantyranta, & Rissanen, 2010). The results indicated that all TPB variables (attitude toward the behavior, the subjective norm, and perceived behavior control) were associated with the professionals' intention to use clinical practice guidelines for their area of specialization in the decisions they would make on the care of patients in the next three months. The strongest factor for the physicians was the perceived behavior control, while the key factor for the nurses and the other professionals was the subjective norm. The authors concluded that the Theory of Planned Behavior is a suitable theoretical basis for implementing clinical guidelines in healthcare practices.

Studies have also tested the TPB's utility in predicting behavioral intention in nurses specifically. A cross-sectional study investigating the factors affecting Iranian nurses' (N=148) intention to implement health literacy strategies in patient education found that perceived behavioral control determined nurses' intention and behaviors (Sharifirad et al., 2015). In 2012, a study by Cote, Gagnon, Houme, Abdeljelil, and Gagnon examined nurses' intention to integrate research evidence into clinical decision- making (and therefore adopt evidence-based practice). They found that nurses' intention to do so was predicted by norm, beliefs, perceived behavioral control, and past behavior and explained 70% of the variance in nurses' intention (Cote et al., 2012). A recent study measured Australian nursing students' intention to care for patients with alcohol dependence using TPB constructs (Talbot, Dorrian, & Chapman, 2015). They found that

subjective norm was the strongest predictor of intention, followed by attitude. External factors such as age and previous alcohol training also held direct paths to antecedents of intention.

One study was identified that utilized the Theory of Reasoned Action (TRA) - the precursor to the Theory of Planned Behavior (Ajzen, 1991) - to predict intention and behaviors among school nurses. This study was designed to predict school nurses' (N=46) provision of sexual health education in the United Kingdom (Mullan & Westwood, 2010). School nurses completed a questionnaire that measured intention, attitude, subjective norm, and behavior. Theory components accounted for 43% of the variance in intention and 46% of the variance in behavior. The authors conclude that the model has good predictive utility in this area and could be employed in interventions with school nurses with the aim of modifying their behavior.

Theory of Planned Behavior Questionnaires

There is no standard Theory of Planned Behavior questionnaire (Ajzen, 2013). Theory of Planned Behavior constructs (attitude, subjective norm, perceived behavioral control, and behavioral intention) are often assessed through questionnaire items developed from the guidelines set forth by Ajzen (2013) in his article Constructing A Theory of Planned Behavior Questionnaire. For example, Lapkin, Levett-Jones, and Gilligan (2014) developed the Theory of Planned Behavior Medication Safety Questionnaire to evaluate the effectiveness of web-based interprofessional learning modules. Psychometric testing with a sample of nursing, medicine, and pharmacy undergraduate students revealed a Cronbach's alpha of 0.85 for the overall questionnaire.

Reliability of the subscales was 0.60 for attitude, 0.58 for subjective norm, and 0.76 for perceived behavioral control. A study by Talbot et al. (2015) developed a 12-item TPB questionnaire with alpha levels indicating poor to high levels of internal consistency (intention at α=0.68, subjective norm at α=0.70, attitude at 0.89, and perceived behavioral control at α=0.21.

Another TPB questionnaire was developed to examine medication adherence in patients with epilepsy (Lin, Updegraff, & Pakpour, 2016). Eight items assessed attitude (α=0.91), three items assessed subjective norm (α=0.90), four items assessed perceived behavioral control (α=0.93), and five items assessed behavioral intention (α=0.86). Watanabe, Berry, Willows, and Bell (2015) developed a TPB questionnaire to assess intention to eat low-glycemic index foods by adults with diabetes. Attitude was assessed with seven items, five items assessed subjective norm, and five items assessed perceived behavioral control. Seven of these items were retained for the main analysis and all had an acceptable reliability range of alpha=0.78-0.93. Another study utilized TPB constructs to predict children's exercise behavior and found reliability scores of α=0.71-0.73 for attitude, α=0.49-0.79 for subjective norm, α=0.53-0.74 for perceived behavioral control, and α=0.86 for intention (Wigginton, Lee, Marshak, & Freier, 2016). Lee, Chiang, Hwang, Chi, and Lin (2016) developed a TPB questionnaire to predict pregnant women's intention to engage in regular exercise. The internal consistency scores for the variables of attitude, subjective norm and perceived behavioral control were all good (alpha values were 0.95, 0.93, 0.84, and 0.93 respectively). Bohon, Cotter, Kravitz, Cello, and Garcia (2016) developed their TPB questionnaire to predict intention to seek mental health services for depression. Reported alpha reliability coefficients ranged from 0.51 to 0.75 for theory constructs.

Systematic Review for the Development of ACES

A systematic review of the literature was conducted to guide the development of ACES. Search criteria included: articles published from 1994-present, full text available online, and availability in English. Search terms included: youth, teen, adolescent OR child; AND smoking, tobacco, cigarette, OR nicotine; AND cessation, quit, Quitline, nicotine replacement therapy, intervention, Wellbutrin, bupropion, Chantix, OR varenicline. Databases searched included Ovid, Medline, Cinahl, PsychoINFO, and Scopus, with 332 articles identified. Of those, 130 were found to meet the inclusion criteria (addressed ages 13-17, focused on cessation rather than prevention, took place in the U.S. or a developed country, and was a peer-reviewed original research or review article). The resulting evidence-based literature guided the development of the ACES toolkit, the quit plan template for adolescent tobacco cessation intervention, and the ACES training.

Developing an Effective Adolescent Tobacco Cessation Training

Cessation interventions that take place through the provision of self-help materials, via a telephone Quitline, in a group setting, and one-on-one have all been shown to be more effective than making an unassisted quit attempt (Fiore et al., 2008). One-on-one cessation coaching is the most effective approach (Fiore et al., 2008), can be implemented on-the-spot, and is highly individualized. As a result of the literature review and needs assessment, school nurses were identified as the ideal provider of cessation services in schools. School nurses need training in efficacious approaches to adolescent cessation such as the 5As, Stages of Change, Motivational Interviewing, and coping strategies/life skills approaches. All cessation interventions should include a behavioral

component to achieve optimal success. Within the ACES training, the behavioral component includes an evidence-based quit plan template and a follow-up form for adolescent tobacco cessation interventions. The quit plan template covers reasons for quitting, triggers, coping strategies, support, and the rewards of quitting (contingency management). It was designed to be completed with persons who are in the preparation or action stage of quitting tobacco as defined by the TTM. The follow-up form covers withdrawal symptoms, triggers experienced, coping strategies used, positive changes experienced, and confidence level to remain tobacco-free. It should be completed with young people who are coming back for follow-up after making a quit attempt.

These tools are unique in several aspects. These tools were developed from the evidence base and are centered in the most recent research advances in adolescent cessation treatments. While many of the components of adult cessation interventions can be used with adolescents, there are some unique differences that must be addressed, and all components need to be developmentally appropriate for this age group. These tools are easy to use for both cessation providers (e.g., school nurses) and adolescents and are variable in the amount of time required to complete. An initial cessation intervention meeting, including using the 5As and completing the quit plan template, could take 15 to 60 minutes, depending on the amount of time available to provide the service. While most of the existing cessation curriculums for adolescents require a group or class setting and the purchase of materials, the tools in ACES can be used one-on-one and at no cost. By having the flexibility to provide individual, on-the-spot cessation interventions, cessation providers in the school setting can reach young people more effectively than they would by referring them to outside services or asking them to wait until there is enough interest and participation to justify a group cessation class.

CHAPTER III

METHODS

Needs Assessment

In the spring of 2015 a comprehensive needs assessment of Missouri school nurses was conducted (Appendix B). First, key informant interviews were conducted. The Missouri State School Nurse Consultant provided contact information for a geographically diverse group of school nurses and coordinators in the state. Key informant interviews were conducted with school nurses (N=8), health service coordinators (N=4) and Department of Health and Senior Services staff (N=2). Examples of interview questions included, "Is tobacco use a problem?" "If at all, how do you currently help student tobacco users quit?" and "What barriers do school nurses face in helping students quit smoking?" The interviews were audiotaped and transcribed, and data were analyzed using qualitative approaches to identify major themes.

Following the key informant interviews, a brief survey was developed and sent out to the Lead Nurse (responsible for coordinating nursing care within the district) at each of the state's 522 districts by the State School Nurse Consultant. Lead Nurses were asked to identify specific elements of their district's tobacco-free policy, problems with policy enforcement, and any cessation services offered. Data were analyzed using descriptive statistics.

The final step in the needs assessment included a semi-structured focus group, held during the annual Missouri Association of School Nurses (MASN) conference with school nurses (N=9) who serve on the organization's board of directors, in order to collect in-depth information on student tobacco use, barriers to providing cessation, and

the status of adolescent cessation tools and training. Examples of focus group questions included, "What training do school nurses receive on providing tobacco cessation?" and "How do you currently help student tobacco users quit?" The focus group was audiotaped and transcribed, and data were analyzed using qualitative approaches to identify major themes.

Toolkit Review and Pilot Study

As a result of the identified need for adolescent tobacco cessation tools and training, the ACES toolkit (Appendix A) was developed by the researcher from the evidence-based literature, best practices for adolescent cessation, and expert advice. The resulting toolkit was reviewed and revised by an expert panel with representation from school nursing (N=9), adolescent health (N=4), and tobacco cessation providers (N=8). The panel was asked to review the toolkit section-by-section and provide feedback on the areas of: section titles, ordering of information, content, layout, and grammar/mechanics. For each section, every reviewer completed a form ranking each of the feedback areas as "satisfactory" or "requires updates" and provided open ended feedback for each area. Reviewer feedback was compiled and incorporated into the final edition of the ACES toolkit.

The ACES toolkit was first presented and pilot tested for effectiveness and acceptability at the 2015 Coordinated School Health Conference during two breakout sessions to see if it could improve nurses' knowledge and self-efficacy in the area of adolescent tobacco cessation. Pre-intervention (Appendix C) and post-intervention (Appendix D) questionnaires were collected. The measures on the pre- and post-

questionnaires included items such as the perceived addictiveness and harm of tobacco products and self-efficacy in helping an adolescent quit tobacco. The results were analyzed using dependent t-tests for paired samples. The results indicated that gains were achieved in each of the areas measured. While pilot testing demonstrated the potential effectiveness of the ACES toolkit for use with school nurses, the instrument used was brief and did not encompass all TPB constructs, the sample size was small, and the study did not have a control group for comparison.

Overview of Current Study

The following will provide details of the approval for the current study, research design and procedures, participants, ACES training intervention, measures, and statistical analyses of this experimental study.

Approval for the Study

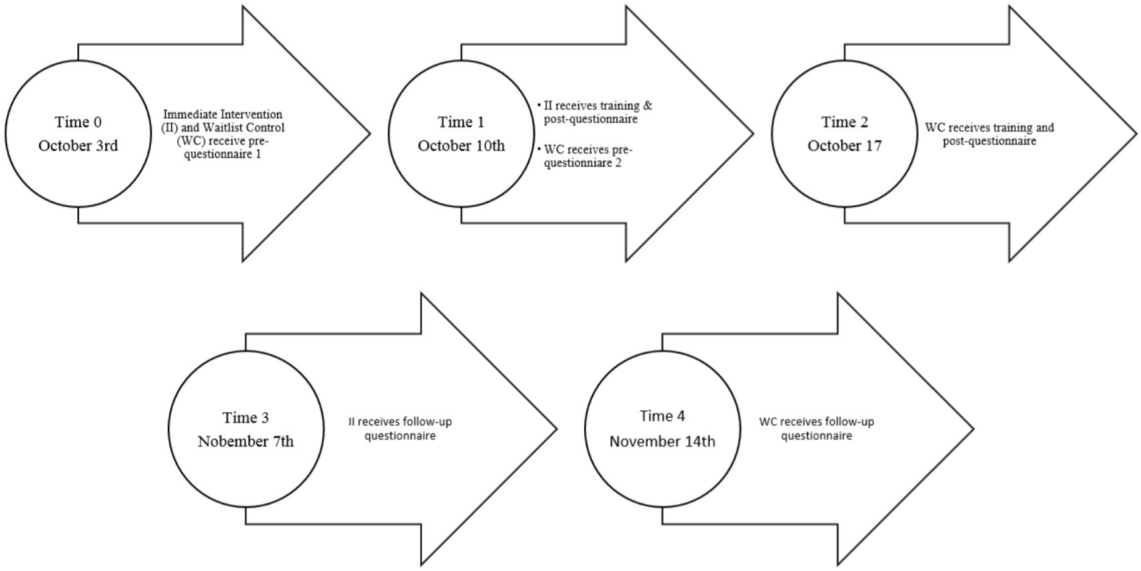
For this experimental research study investigating the efficacy and acceptability of the ACES training designed to improve Missouri school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent tobacco cessation services, an application was submitted to the Campus Institutional Review Board (IRB) at the University of Missouri. The research design, intervention, and instrumentation were reviewed by Campus IRB for legal and research ethical standards. Because the participants were adults at least 18 years of age, informed consent was obtained, and there were no foreseen risks to the participants, Campus IRB determined the study met the criteria for expedited approval.

Design and Procedures

For this experimental study, prior to intervention, all participants were randomly assigned to either the immediate intervention (II) group or wait-list control (WC) group. Half of the participants were randomly assigned to receive the web-based ACES training intervention at time 1, and the other half were randomly assigned to receive the ACES intervention at time 2 (one week later) (Figure 1). Prior to the start of the online training intervention (time 0), a pre-intervention questionnaire was administered online to every participant (II and WC) (Appendix E). Participants were told that those completing the pre-intervention questionnaire, intervention, post-intervention questionnaire, and follow- up questionnaire would receive a certificate of completion, a printed copy of the ACES toolkit to be used in their school, and be entered into a drawing to win one of ten $100 gift cards.

At the conclusion of the pre-intervention questionnaire, II participants were given access to the web-based ACES training video and instructed to watch it within a one- week time period. Subsequently, the post-intervention questionnaire (Appendix F) was administered to II participants (time 1). Simultaneously at time 1, WC participants completed a second pre-intervention questionnaire (Appendix G). Next, the online ACES training video intervention was made available to the WC participants. The wait-list control participants completed the same intervention over a one-week period and completed the same post-intervention questionnaire (at time 2) as the II participants. The WC participants also received a certificate of completion, a printed copy of the ACES toolkit, and were entered into the gift card drawing. Both groups, II and WC, were asked to complete a final follow-up questionnaire four weeks after completion of the post-questionnaire (time 3 and time 4, respectively) (Appendix H).

Figure 1. Data Collection Timeline



Participants

All Missouri school nurses were invited to participate in the research study (N=1,624). The State School Health Consultant, the Missouri Association of School Nurses, the Coordinated School Health Coalition, the Missouri Department of Health and Senior Services, and Asthma Ready Communities assisted in promoting the research project via email lists and newsletters. One hundred and fifty-four participants signed up for the current study with 122 completing the pre-questionnaire. PowerUp!, a tool for calculating minimum detectable effect sizes and minimum required sample sizes for experimental and quasi-experimental design studies (Dong & Maynard, 2013), was used for power analysis and determined that a sample of 122 total individuals has sufficient power (at least 0.80) to detect medium effect size differences (0.45) at alpha=0.05.

Treatment Intervention: ACES Training

The intervention in this study was viewing a 30-minute training video of a PowerPoint presentation with voice over (Appendix I) which was developed from the ACES toolkit. It was developed by the researcher and was intended to be easy-to-use and practical. The intervention is divided into three main sections: Background, Implementation, and Resources. Section 1 – Background – provides an overview of the toolkit, including: who it is intended for, who the tools benefit, and why it is needed. The consequences of nicotine addiction among adolescents is discussed, and types of tobacco and nicotine products (cigarettes, cigars/cigarillos, hookah, smokeless, and ENDS [electronic nicotine delivery systems]) are reviewed in terms of their function, harms, and use by adolescents. Data on tobacco and nicotine product initiation by adolescents are summarized and lead into a discussion of both the physical and social harms of tobacco use by adolescents. The training includes Missouri-specific prevalence data (cigarette smoking, ENDS use, smokeless tobacco use, and ever use of any form of tobacco), highlighting adolescent tobacco use disparities between Missouri and the nation. Reasons for these disparities are explored, including the lack of state prevention funding, the lack of a comprehensive statewide smokefree indoor air law, and having the lowest state tobacco excise tax in the nation ($0.17 vs $1.69 nationally). Adolescents' intention to quit tobacco is covered, along with a case for why cessation is needed in schools and the role that school nurses can play in offering this service. In addition, an explanation of the differences between prevention and cessation activities is included.

Section 2 – Implementation – covers the skills and tools needed to effectively assist an adolescent in quitting tobacco. This section covers the 5As approach, the Stages of

Change/Transtheoretical Model, and Motivational Interviewing. Specific examples of how to apply these behavior change approaches with adolescent tobacco users are included. This section includes an evidence-based quit plan template, along with a guide to its use, both of which were developed specifically for ACES. The quit plan template covers reasons for quitting, triggers, coping strategies, support, and rewards of quitting. The quit plan is designed to be used only with young people who are currently ready and willing to quit tobacco. The quit plan was designed to be completed by an adolescent with the guidance and support of an adult, such as the school nurse or other school professional, who will serve as the "quit coach." The quit coach should guide the adolescent through its completion, section-by-section, asking open-ended questions and stimulating conversation along the way. The quit coach can ask the adolescent the questions on the quit plan and write down his or her responses, or give the quit plan directly to the adolescent to fill out. However, the quit coach should be involved in the development of the plan by engaging the adolescent in conversations about quitting and not simply hand it out like a homework assignment. An overview of each section of the quit plan and an example of a completed quit plan are included in the toolkit and training. Section 2 also includes a follow-up form to be used during return visits with adolescents who are quitting.

Section 3 – Resources – includes a list of self-help materials organized by modality (online, text messaging, instant messaging, phone, mobile apps, videos, and worksheets/quizzes) to help adolescents during the quitting process. This section concludes with contact information for professionals in Missouri who can assist with adolescent tobacco cessation, including the researcher, the State School Nurse Consultant, and the State

Comprehensive Tobacco Control Coordinator.

To improve fidelity of the training intervention, participants were required to answer the following question in the post-questionnaire, "I watched the ACES tutorial video [Yes, completely; Yes, partially; No]." This helped ensure that participants being analyzed had a similar base-level of exposure to the intervention.

Measures and Questionnaire Development

According to Ajzen (2013), questionnaire construction begins with defining the behavior in question in terms of its target, action, context, and time elements. In this case, providing evidence-based adolescent tobacco cessation services is defined as helping at least one adolescent quit tobacco in the upcoming year. The next step in questionnaire construction is clearly defining the research population. In the current study the research population is Missouri school nurses (LPNs, RNs, and Health Service Coordinators). Next, items are formulated to assess each of the theory's major constructs: attitude, subjective norm, perceived behavioral control, and intention. According to Ajzen, seven- point bipolar adjective scales are typically employed. Ajzen provides sample items assessing intention and each aspect of attitude, subjective norm, and perceived behavioral control. Participants were asked to circle the number that best describes their personal opinions. The items were formulated to be exactly compatible with the behavioral criterion and to be self-directed.

Next, formative research is required to construct a questionnaire suitable for the behavior and population of interest. This must be elicited from a representative sample of the research population. For the current study, this formative research took place during

the comprehensive needs assessment of Missouri school nurses, including key informant interviews and a focus group (Wintemberg & Everett, 2016). In accordance with Ajzen's guidelines for questionnaire construction, this small sample of representative individuals was used to elicit readily accessible behavioral outcomes, normative referents, and control factors, and the elicitation was done individually in a free response format. Analysis of the needs assessment resulted in lists of salient outcomes, referents, and control factors. These lists were used to construct items to be included in the current questionnaire, as described below.

In the current study eight items were developed to measure attitude, eight to measure subjective norm, eight to measure perceived behavioral control, and two to measure behavioral intention. All TPB items were measured on 7-point bipolar adjective Likert item scales. For example, "Helping an adolescent quit his/her tobacco use will be professionally rewarding [1=Extremely Unlikely, 2, 3, 4=Neither Unlikely Nor Likely, 5, 6, 7=Extremely Likely]" and "I am confident that if I wanted to I could help an adolescent quit his/her tobacco use [1=Definitely True, 2, 3, 4=Neither True Nor False, 5, 6, 7=Definitely False]." Theory constructs were assessed at all time points (times 0, 1, 2, 3, and 4).

Acceptability of the ACES training was assessed post-intervention and at follow-up through six items covering ease of use, enjoyment, helpfulness, and other relevant issues. Examples include, "How effectively does the training help you deal with adolescent tobacco use? [1=Very Ineffective, 2, 3, 4=Neither Ineffective Nor Effective, 5, 6, 7=Very Effective]" and "How likely are you to recommend the ACES training to another school nurse? [1=Very Unlikely, 2, 3, 4=Neither Unlikely Nor Likely, 5, 6, 7=Very Likely].

School nurse satisfaction with the ACES training was assessed post-intervention and at follow-up via two item; "How would you rate your overall satisfaction with the ACES training? [1=Very Dissatisfied, 2, 3, 4=Neither Dissatisfied Nor Satisfied, 5, 6, 7=Very Satisfied]" and "How satisfied are you with the knowledge you gained? [1=Very Dissatisfied, 2, 3, 4=Neither Dissatisfied Nor Satisfied, 5, 6, 7=Very Satisfied]."

Participants were asked to provide demographic characteristics about themselves as well as the schools that they serve. Demographics were collected at time 0, but not at the other time points. Demographic information included gender, age, race/ethnicity, education (ADN, Diploma, BA, BS, BSN, MA, MSN, Doctorate), staff position (LPN, RN, Health Services Coordinator, Other), years of service in school nursing, primary school type (public, charter, private, parochial, alternative, vocational, other), number of schools covered, grades served, school district enrollment size, previous formal training in tobacco cessation, and employment in the state of Missouri.

The resulting questionnaires were reviewed by the Director of Research at the National Association of School Nurses (NASN) and the NASN Research Committee. Their feedback was incorporated into the final questionnaires utilized in this study.

Statistical Analyses

Survey responses were entered into a database and all analyses were conducted with the statistical software SAS 9.3 (SAS Institute, Inc, Cary, North Carolina). All participants indicated that they had watched the intervention training video in its entirety and were included in the main analyses. Descriptive statistics were calculated for all measures. Baseline differences between the II and WC groups on all demographic

measures were analyzed using Chi-Square analyses for all categorical data (or Fisher's Exact Tests when appropriate for small cell sizes) and with independent T-tests for all continuous data. The level for statistical significance was set to alpha=0.05.

Reliability analyses using standardized Cronbach's alpha were conducted for each TPB construct at each timepoint to determine how closely related each set of construct items were as a group and if any items should be dropped prior to the main analyses in order to increase scale reliability. An item was dropped if doing so increased the overall alpha level by 0.01 or more. Negative scale items were reverse coded. After reliability analyses, the number of items was reduced and scales were created for each theory construct (attitude, subjective norm, perceived behavioral control, and intention) by summing each set of responses. Taken together, these scales will be referred to as the Theory of Planned Behavior – Adolescent Cessation in Every School (TPB-ACES) questionnaire.

Paired samples T-tests of theory constructs were conducted from pre-intervention to post-intervention and from pre-intervention to follow-up. Means, standard deviations, T-statistics, p-values, and Cohen's d were reported. Independent T-tests of theory constructs were conducted at time 1 (pre-intervention for WC, post-intervention for II). Means, standard deviations, T-statistics, p-values, and Cohen's d were reported. Point-biserial correlational analyses were conducted for each theory construct scale at pre-intervention, post-intervention, and follow-up. Correlation coefficients (r) and p-values are reported.

A multiple linear regression model predicting intention at each study timepoint using TPB constructs and demographics was conducted. Additional multiple linear

regression models predicting intention at post-intervention and at follow-up using pre-intervention TPB constructs were conducted. Unstandardized regression coefficients (B) and 95% confidence limits are reported.

For each hypothesis, a corresponding plan for statistical analysis is outlined below:

1. To determine the effect of intervention over control, differences between the groups at time 1 (II at post-intervention, WC at pre-intervention), were analyzed using independent samples T-tests.
2. To determine if attitude, subjective norm, and perceived behavioral control correlate with intention at pre-intervention (time 0), post-intervention (II at time 1, WC at time 2), or follow-up (II at time 3, WC at time 4), a point-biserial correlation analysis was conducted.
3. To determine if attitude, subjective norm, and perceived behavioral control predict nurses' intention when controlling for demographic variables at each timepoint, multiple linear regression analyses were conducted with intention as the dependent variable. Unstandardized regression coefficients, 95% confidence limits, adjusted R2, F statistic, and p-values are reported.
4. To determine if attitude, subjective norm, and perceived behavioral control at pre-intervention (time 0) predict nurses' intention at post-intervention (II at time 1, WC at time 2) when controlling for demographic variables, a multiple linear regression analysis was conducted with intention as the dependent variable. Unstandardized regression coefficients, 95% confidence limits, adjusted R2, F statistic, and p-values are reported.
5. To determine if attitude, subjective norm, and perceived behavioral control at pre-

intervention (time 0) predict nurses' intention at follow-up (II at time 3, WC at time 4) when controlling for demographic variables, a multiple linear regression analysis was conducted with intention as the dependent variable. Unstandardized regression coefficients, 95% confidence limits, adjusted R2, F statistic, and p- values are reported.

CHAPTER IV

RESULTS

Demographics and Descriptive Statistics

At time 0, 122 school nurses completed the baseline questionnaire (WC: N=64, II: N=58). At time 1 (pre-intervention for WC, post-intervention for II), 106 nurses completed the questionnaire (WC: N=58, II: N=48). At time 2 (post-intervention for WC only), 53 completed the questionnaire. At time 3 (4 week follow-up for II nurses), 39 nurses completed the questionnaire. At time 4 (4 week follow-up for WC nurses), 42 nurses completed the questionnaire. Sample sizes of the two group at each timepoint are reported in Table 1.

Table 1. Sample Sizes

Time Point	Waitlist Control Group	Immediate Intervention Group	Total	Participation Proportion
Time 0	64	58	122	100%
Time 1	58	48	106	87%
Time 2	53	--	53	83%
Time 3	--	39	39	67%
Time 4	42	--	42	66%

The average age of to race, 93% of the sample participants was 48 years, and 99% were female. With regards identified as white, and 100% were of a non-Hispanic ethnicity. For education, 39% of the sample had a bachelor of science in nursing (BSN) degree, 25% had a diploma, and 22% had an associate degree in nursing (ADN). Overall, 22% of participants held LPN staff positions, 60% held RN positions, 14% held Health Service Coordinator positions, and 4% held other positions. The only demographic variable on

which the two groups (Waitlist Control and Immediate Intervention) differed was type of staff position held. The WC group had significantly more Health Service Coordinators compared to the II group (20% v 7%). The average years of service in the school nursing profession was 9.2 years. Six percent of school nurses in the sample had previously received formal tobacco cessation training. Ninety-seven percent of nurses are employed by their school district and 83% are employed in the state of Missouri.

Ninety-seven percent of the sample worked in public schools. Thirty-nine percent of nurses served only one grade, and 17% of nurses served Pre-Kindergarten through 12th grades. The majority (63%) of nurses worked only in one building, and 20% of nurses worked in a building with a school-based health center. School district enrollment ranged from 146 to 25,000 (M=6,595, SD= 7,700).

Approximately 17% of school nurses sampled reported that they had provided evidence-based strategies to adolescents on ways to quit tobacco in the past year, and 9% reported helping an adolescent quit tobacco in the past year. See Table 2 for a summary of the descriptive statistics of the demographic variables.

Table 2. Participant Demographics

	Waitlist Control (N=64)		Immediate Intervention (N=58)		Total (N=122)	
	N	%	N	%	N	%
Individual-Level Demographics						
Mean Age (SD)	48.3 (11.1)		46.9 (10.3)		47.6 (10.7)	
Age (in years)						
25-34	8	12.5	11	19.0	19	15.6
35-44	16	25.0	12	20.7	28	23.0
45-54	18	28.1	20	34.5	38	31.2
55-64	17	26.6	13	22.4	30	24.6
65+	5	7.8	2	3.5	7	5.7
Gender						
Female	64	100.0	57	98.3	121	99.2
Male	0	0.0	1	1.7	1	0.8
Race						
White	59	92.2	54	3	113	93.4
Non-White	5	7.8	94.7	5.3	8	6.6
Education						
Associates Degree in Nursing	16	25.0	11	19.0	27	22.1
Diploma in Nursing	16	25.0	14	24.1	30	24.6
Bachelor of Arts	0	0.0	3	5.2	3	2.5
Bachelor of Science	2	3.1	3	5.2	5	4.1
Bachelor of Science in Nursing	26	40.6	22	37.9	48	39.3
Master of Arts	2	3.1	2	3.5	4	3.3
Master of Science in Nursing	2	3.1	3	5.2	5	4.1
Staff Position						
LPN	10	15.6	17	29.3	27	22.1
RN	38	59.4	35	60.3	73	59.8
Health Services Coordinator	13	**20.3**	4	**6.9**	17	13.9
Other	3	4.7	2	3.5	5	4.1

	Waitlist Control (N=64)		Immediate Intervention (N=58)		Total (N=122)	
Mean years of service in school nursing (SD)	9.0 (7.6)		9.5 (8.3)		9.2 (7.9)	
Years of service in school nursing						
1-5	31	48.4	24	41.4	55	45.1
6-10	8	12.5	12	20.7	20	16.4
11-15	10	15.6	7	12.1	17	13.9
16-20	7	10.9	8	13.8	15	12.3
21+	8	12.5	7	12.1	15	12.3
Employer						
School district	61	95.3	57	98.3	118	96.7
Other	3	4.7	1	1.7	4	3.3
Employed in Missouri						
Yes	52	81.3	49	84.5	101	82.8
No	12	18.8	9	15.5	21	17.2
Have formal training in tobacco cessation						
Yes	3	4.7	4	6.9	7	5.7
No	61	95.3	54	93.1	115	94.3
School-Level and District-Level Demographics						
Primary school type						
Public	61	95.3	57	98.3	118	96.7
Other	3	4.7	1	1.7	4	3.3
Number of grades served						
1	24	37.5	23	39.7	47	38.5
2-4	12	18.8	8	13.8	20	16.4
5-7	7	10.9	8	13.8	15	12.3
8-10	5	7.8	6	10.3	11	9.0
11-13	4	6.3	4	6.9	8	6.6
14 (Pre-K - 12th)	12	18.8	9	15.5	21	17.2
Buildings served						
1	36	56.3	39	69.6	75	62.5
2	14	21.9	8	14.3	22	18.3
3	3	4.7	4	7.1	7	5.8
4+	11	17.2	5	8.9	16	13.3

	Waitlist Control (N=64)		Immediate Intervention (N=58)		Total (N=122)	
Has a school health center						
Yes	15	23.4	9	15.5	24	19.7
No	49	76.6	49	84.5	98	80.3
Mean school district enrollment (SD)	6975.2	(7928.3)	6114.8	(7539.7)	6594.6	(7733.4)
School district enrollment						
1-1,000	17	29.3	14	31.1	31	30.1
1,001-5,000	20	34.5	15	33.3	35	34.0
5,001-10,000	2	3.5	4	8.9	6	5.8
10,001+	19	32.8	12	26.7	31	30.1
Past Behavior						
Provided evidence-based strategies to adolescents on ways to quit (past year)						
True	9	14.1	12	20.7	21	17.2
False	55	85.9	46	79.3	101	82.8
I have helped an adolescent quit tobacco (past year)						
True	4	6.3	7	12.1	11	9.0
False	60	93.8	51	87.9	111	91.0

Bold text= statistically significant at $p<0.05$

Reliability Analysis

Prior to the main analyses, reliability of the TPB construct items (attitude, N=8; subjective norm, N=8; perceived behavioral control, N=8; and intention, N=2) were assessed using Cronbach's alpha. Results indicated that one item should be dropped from attitude, three items should be dropped from subjective norm, and three items should be dropped from perceived behavioral control in order to increase internal consistency. No items were dropped from intention. The resulting alpha levels ranged from 0.72-0.90 for attitude (N=7), 0.85-0.90 for subjective norm (N=5), 0.66-0.77 for perceived behavioral control (N=5), and 0.82-0.89 for intention (N=2); acceptable alpha levels for social science research (Osborn & Waters, 2002). These final reduced TPB-ACES construct scales were used for all study analyses. See Table 3 for the alpha levels of all the outcome measures at each time point.

Table 3. Reliability Analysis

	Pre-Intervention		Post-Intervention		Follow-Up	
	All items α	With items deleted α	All items α	With items deleted α	All items α	With items deleted α
Attitude	0.67	0.72	0.87	0.85	0.85	0.90
Subjective Norm	0.73	0.85	0.76	0.86	0.80	0.90
PBC	0.58	0.66	0.62	0.75	0.68	0.77
Intention	0.88	0.88	0.82	0.82	0.89	0.89

Outcome Variables

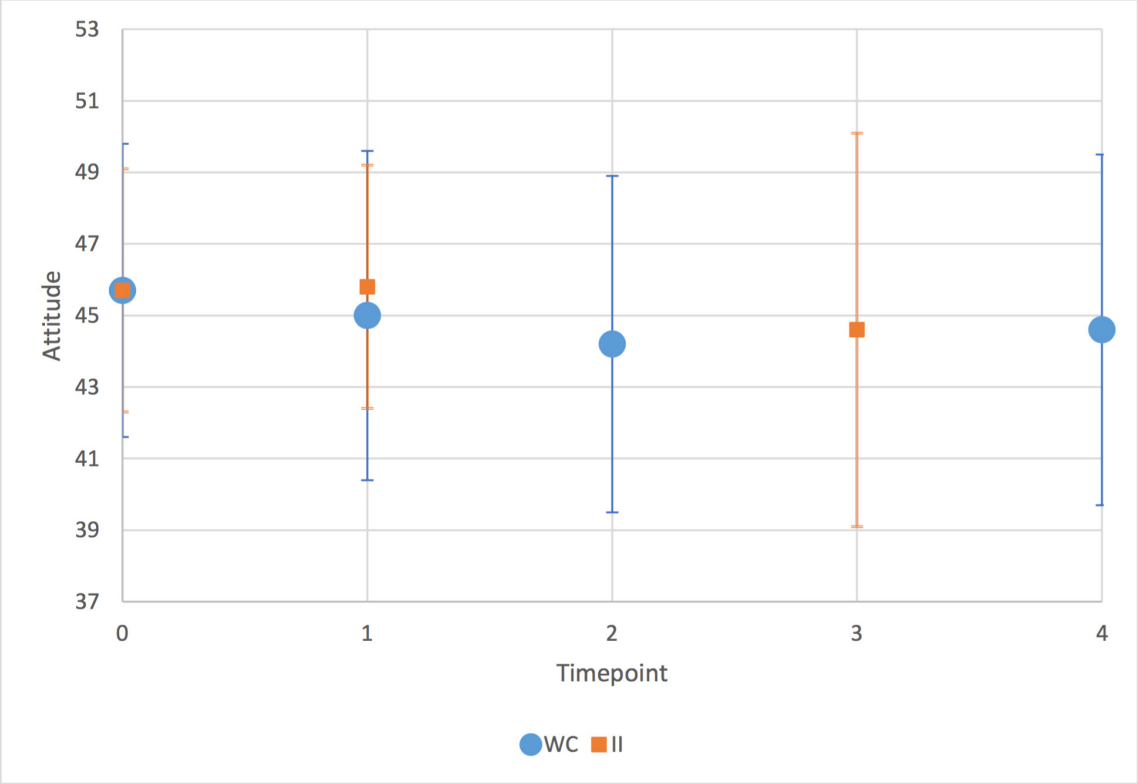
Following the reliability analyses, all later analyses with TPB constructs were reported as scores of the summed scales (for attitude, subjective norm, perceived behavioral control, and intention). Scale values are reported by group for each timepoint in Table 4.

Table 4. TPB Construct Mean Scores by Group and Timepoint

	Time 0		Time 1		Time 2	Time 3	Time 4
	WC (N=64)	II (N=58)	WC (N=58)	II (N=48)	WC (N=53)	II (N=39)	WC (N=42)
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Attitude (7 items; scale: 7-49)	45.7 (4.1)	45.7 (3.4)	45.0 (4.6)	45.8 (3.4)	44.2 (4.7)	44.6 (5.5)	44.6 (4.9)
Subjective Norm (5 items; scale: 5-35)	22.7 (6.6)	23.2 (6.9)	22.1 (6.3)	23.5 (6.3)	22.4 (6.0)	23.1 (7.6)	22.2 (6.3)
PBC (5 items; scale: 5-35)	22.6 (4.8)	22.8 (4.7)	22.7 (4.9)	24.4 (5.3)	23.9 (4.1)	23.7 (5.5)	23.3 (4.5)
Intention (2 items; scale: 2-14)	9.2 (2.6)	8.9 (2.9)	8.9 (2.6)	9.3 (2.9)	9.5 (2.6)	8.9 (2.9)	9.5 (2.4)

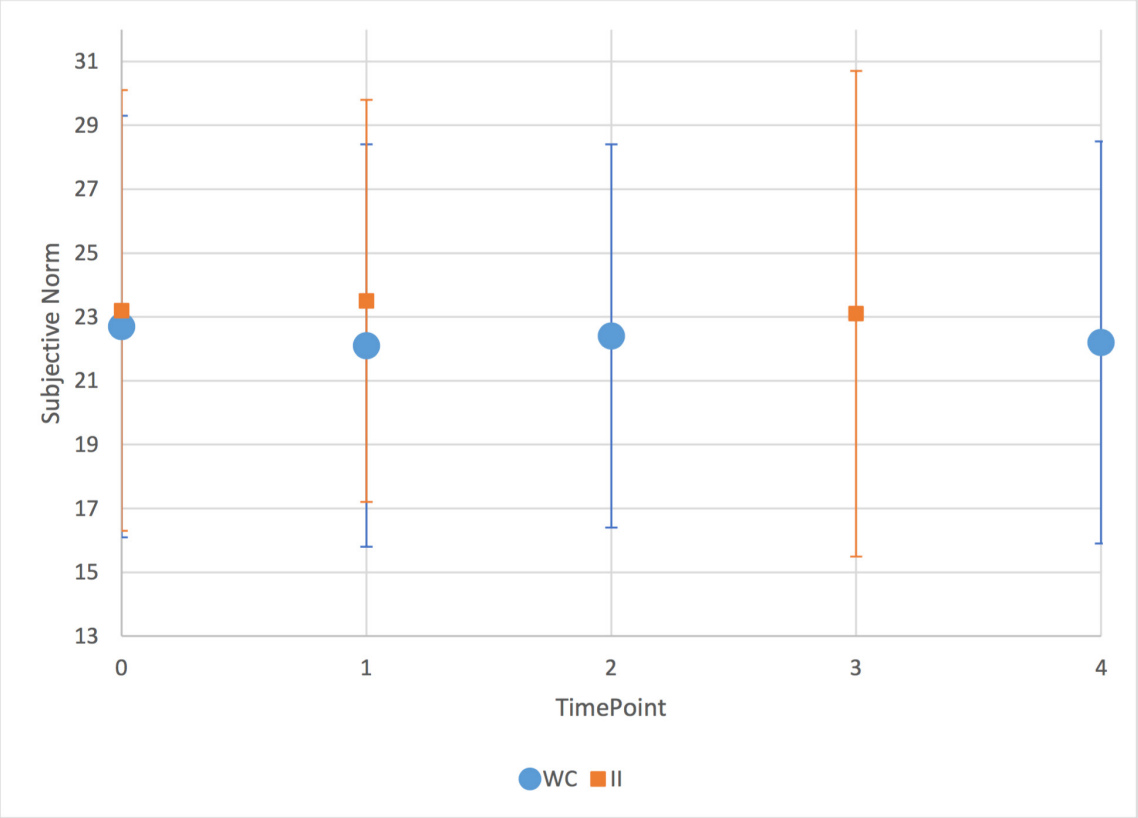
With regards to attitude, the two groups were similar at time 0. Although not statistically significant, at time 1 the Immediate Intervention group (post-intervention) had slightly higher scores than the Waitlist Control group (pre-intervention). The two groups has similar attitude scores at follow-up. See Figure 1 for attitude scores by group and timepoint.

Figure 2. Attitude Scores by Group and Timepoint



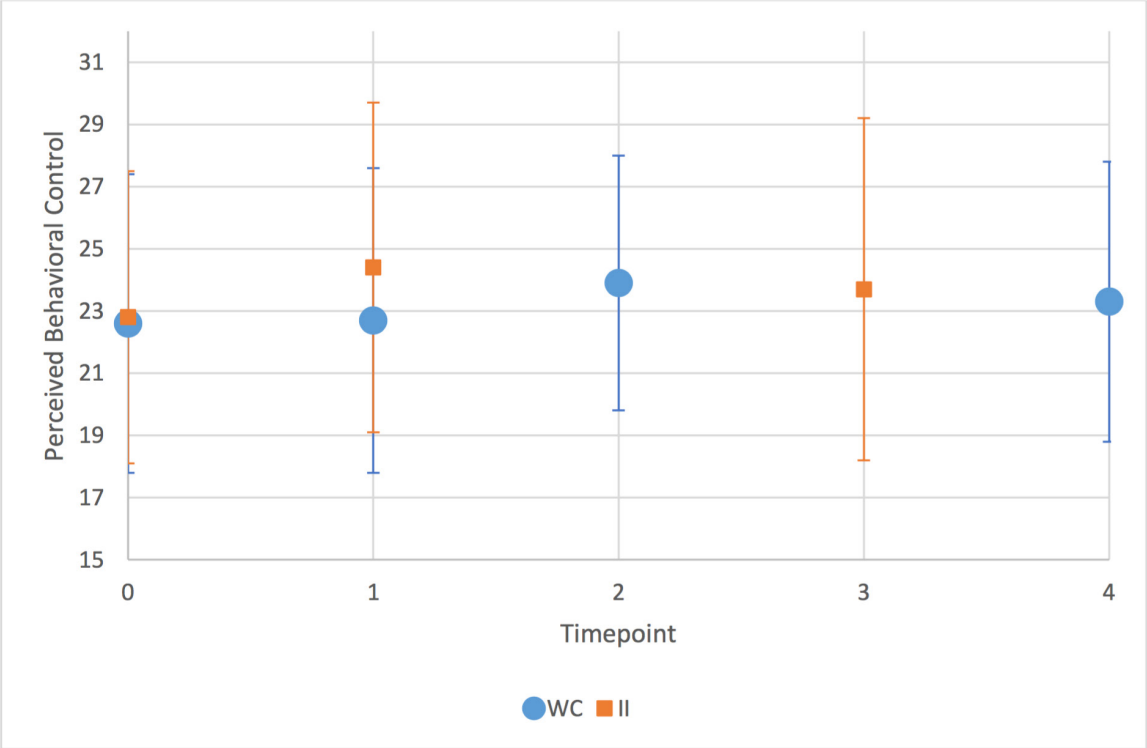
For subjective norm, the II group was slightly higher at time 0, at time 1, and at follow-up. These differences were not statistically significant. See Figure 2 for subjective norm scores by group and timepoint.

Figure 3. Subjective Norm Scores by Group and Timepoint



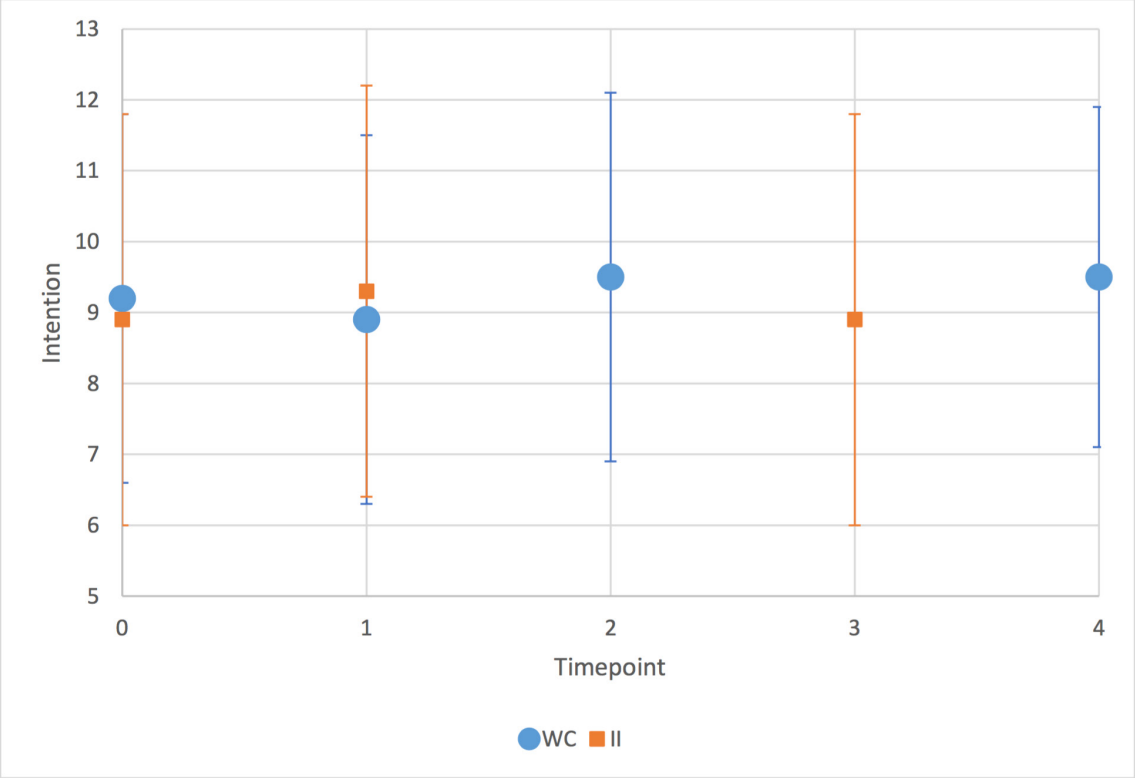
The two groups has similar perceived behavioral control scores at time 0. II had slightly higher, although not statistically significant, scores than WC at time 1, and the two groups were similar at follow-up. See Figure 3 for perceived behavioral control scores by group and timepoint.

Figure 4. Perceived Behavioral Control Scores by Group and Timepoint



For intention, the WC group had slightly higher, although non-significant, scores compared to the II group at time 0. Later at time 1, II reported higher intention scores compared to WC. The WC group reported higher intention scores compared to II at follow-up. However, these differences were not statistically significant. See Figure 4 for intention scores by group and timepoint.

Figure 5. Intention Scores by Group and Timepoint



Paired sample T-tests of TPB constructs from pre-intervention to post-intervention found a significant decrease in mean attitude scores (45.7 vs 44.4; $p<0.05$) and a significant increase in mean perceived behavioral control scores (22.7 vs 23.8; $p<0.05$). The significant increase in perceived behavioral control mean scores persisted from pre-intervention to follow-up (22.7 vs 23.5, $p<0.05$). See table 5 for a complete list of paired sample T-tests.

Table 5. Paired Samples T-Tests of TPB Constructs

	Pre-Intervention n (N=122)	Post-Intervention n (N=101)				Pre-Intervention n (N=122)	Follow-Up (N=81)			
	M (SD)	M (SD)	t	p	Cohen's d	M (SD)	M (SD)	t	p	Cohen's d
Attitude (scale: 7-49)	45.7 (3.8)	44.4 (5.0)	2.23	0.03	-0.29	45.7 (3.8)	44.6 (5.1)	1.32	0.19	-0.24
Subjective Norm (scale: 5-35)	23.0 (6.7)	22.7 (6.7)	0.80	0.43	-0.04	23.0 (6.7)	22.6 (6.9)	1.11	0.27	-0.06
PBC (scale: 5-35)	22.7 (4.8)	23.8 (4.7)	-3.23	<0.01	0.23	22.7 (4.8)	23.5 (5.0)	-2.35	0.02	0.16
Intention (scale: 2-14)	9.1 (2.8)	9.2 (2.8)	-1.69	0.09	0.04	9.1 (2.8)	9.5 (2.9)	-1.56	0.12	0.14

Acceptability and satisfaction with the ACES training were reported at post-intervention and follow-up. The overall satisfaction with the ACES training was high at post-intervention (M=6.0, SD=0.97) and at follow-up (M=5.9, SD=1.06). See Table 6 for a complete list of acceptability and satisfaction scores.

Table 6. Acceptability and Satisfaction Mean Scores at Post-Intervention and Follow-Up

	Post-Intervention N=101	Follow-Up N=81
Mean (Standard Deviation)		
Acceptability		
How easy was the ACES tutorial for you to use? [Very difficult (1) - Very easy (7)]	6.4 (0.9)	6.2 (1.0)
How understandable was the ACES tutorial? [Difficult to understand (1) – Easy to understand (7)]	6.5 (0.8)	6.3 (0.89)
How much did you enjoy viewing the ACES tutorial? [Not at all enjoyable (1) – Very enjoyable (7)]	5.5 (1.0)	5.6 (1.1)
Was the amount of time it took to view the ACES tutorial acceptable? [Very unacceptable (1) – Very acceptable (7)]	6.0 (1.1)	6.0 (1.1)
How likely are you to recommend the ACES tutorial to another school nurse? [Very unlikely (1) – Very likely (7)]	5.9 (1.1)	5.8 (1.3)
How effectively does the ACES tutorial help you deal with adolescent tobacco use? [Very ineffective (1) – Very effective (7)]	5.6 (1.0)	5.5 (1.1)
Satisfaction		
How would you rate your overall satisfaction with the ACES tutorial? [Very dissatisfied (1) – Very satisfied (7)]	6.0 (1.0)	5.9 (1.1)
How satisfied are you with the knowledge you gained? [Very dissatisfied (1) – Very satisfied (7)]	6.0 (1.0)	5.9 (1.0)

Results of Hypotheses

Hypothesis 1.

There were no significant differences between the WC and II groups at time 1 (pre- intervention for WC, post-intervention for II) on theory construct scores (attitude, subjective norm, perceived behavioral control, and intention). See Table 7 for a complete list of scores at time 1.

Table 7. Independent Samples T-tests of TPB Constructs at Time 1 (pre-intervention for WC, post-intervention for II)

	WC at Pre-Intervention	II at Post-Intervention			
	M (SD)	M (SD)	t	p	Cohen's d
Attitude	44.9 (4.6)	45.7 (3.4)	1.05	0.30	0.20
Subjective Norm	22.1 (6.3)	23.3 (6.2)	1.13	0.26	0.19
PBC	22.6 (4.9)	24.2 (5.2)	1.78	0.08	
Intention	8.8 (2.6)	9.2 (2.9)	0.81	0.42	0.15

Hypothesis 2.

Attitude at pre-intervention had a moderate positive relationship with attitude at post- intervention ($r=0.52$, $p<.0001$) and at follow-up ($r=0.54$, $p<.0001$). Subjective norm at pre- intervention had a moderate positive relationship with subjective norm at post-intervention ($r=0.44$, $p<.0001$) and at follow-up ($r=0.47$, $p<.0001$). Perceived behavioral control at pre-intervention had a moderate positive relationship with perceived behavioral control at post-intervention ($r=0.50$, $p<.001$) and at follow-up ($r=0.47$, $p<.0001$). Intention at pre-intervention had a large positive relationship with intention at post-intervention

(r=0.84, p<.0001) and a moderate positive relationship at follow-up (r=0.57, p<.0001). Attitude at pre-intervention was not significantly correlated with subjective norm at any timepoint. Attitude at pre-intervention was not significantly correlated with perceived behavioral control at pre-intervention, although attitude at pre-intervention had a weak positive relationship with perceived behavioral control at post-intervention (r=0.29, p=.0071) and at follow-up (r=0.23, p=.0489). Attitude at pre-intervention also had a weak positive relationship with intention at pre-intervention (r=0.26, p=.0034), at post-intervention (r=0.19, p=.0429), and at follow-up (r=0.24, p=0.0375). Subjective norm at pre-intervention had a weak positive relationship with perceived behavioral control at pre-intervention (r=0.35, p<.0001) and a weak positive relationship at follow-up (r=0.29, p=.0101). Subjective norm at pre-intervention was not significantly correlated with perceived behavioral at post-intervention. Subjective norm at pre- intervention had a moderate positive relationship with intention at pre-intervention (r=0.54, p<.0001), at post-intervention (r=0.51, p<.0001), and a weak positive relationship at follow-up (r=0.30, p=.0085). Perceived behavioral control at pre-intervention had a moderate positive relationship with intention at pre-intervention (r=0.52, p<.0001), at post-intervention (r=0.46, p<.0001), and a weak positive relationship at follow-up (r=0.31, p=.0059). See Table 8 for the correlations of all constructs a pre-intervention, post-intervention, and follow-up.

Table 8. Correlational Analysis

	Attitude Pre	Attitude Post	Attitude FU	Norm Pre	Norm Post	Norm FU	Control Pre	Control Post	Control FU	Intention Pre	Intention Post	Intention FU
Attitude Pre	1.00 122	0.52 <.0001 87	0.54 <.0001 77	0.15 0.0978 122	0.15 0.1813 84	0.14 0.2130 77	0.15 0.0958 122	0.29 0.0071 87	0.23 0.0489 77	0.26 0.0034 122	0.19 0.0429 109	0.24 0.0375 77
Attitude Post	0.52 <.0001 87	1.00 92	0.86 <.0001 78	0.23 0.0314 87	0.42 <.0001 88	0.27 0.0159 78	0.26 0.0146 87	0.54 <.0001 92	0.46 <.0001 78	0.24 0.0225 87	0.38 0.0002 89	0.27 0.0165 78
Attitude FU	0.54 <.0001 77	0.86 <.0001 78	1.00 81	0.28 0.0149 77	0.32 0.0045 76	0.31 0.0055 81	0.23 0.0466 77	0.47 <.0001 78	0.50 <.0001 81	0.25 0.0294 77	0.33 0.0040 75	0.32 0.0033 81
Norm Pre	0.15 0.0978 122	0.23 0.0314 87	0.28 0.0149 77	1.00 122	0.44 <.0001 84	0.47 <.0001 77	0.35 <.0001 122	0.21 0.0526 87	0.29 0.0101 77	0.54 <.0001 122	0.51 <.0001 109	0.30 0.0085 77
Norm Post	0.15 0.1813 84	0.42 <.0001 88	0.32 0.0045 76	0.44 <.0001 84	1.00 8	0.84 <.0001 76	0.43 <.0001 84	0.52 <.0001 88	0.43 0.0001 76	0.34 0.0016 84	0.43 <.0001 85	0.33 0.0032 76
Norm FU	0.14 0.2130 77	0.27 0.0159 78	0.31 0.0055 81	0.47 <.0001 77	0.84 <.0001 76	1.00 81	0.41 0.0002 77	0.46 <.0001 78	0.48 <.0001 81	0.39 0.0005 77	0.41 0.0003 75	0.39 0.0003 81
Control Pre	0.15 0.0958 122	0.26 0.0146 87	0.23 0.0466 77	0.35 <.0001 122	0.43 <.0001 84	0.41 0.0002 77	1.00 122	0.50 <.0001 87	0.47 <.0001 77	0.52 <.0001 122	0.46 <.0001 109	0.31 0.0059 77
Control Post	0.29 0.0071 87	0.54 <.0001 92	0.47 <.0001 78	0.21 0.0526 87	0.52 <.0001 88	0.46 <.0001 78	0.50 <.0001 87	1.00 92	0.85 <.0001 78	0.25 0.0183 87	0.39 0.0001 89	0.27 0.0176 78
Control FU	0.23 0.0489 77	0.46 <.0001 78	0.50 <.0001 81	0.29 0.0101 77	0.43 0.0001 76	0.48 <.0001 81	0.47 <.0001 77	0.85 <.0001 78	1.00 81	0.37 0.0008 77	0.39 0.0005 75	0.33 0.0029 81
Intention Pre	0.26 0.0034 122	0.24 0.0225 87	0.25 0.0294 77	0.54 <.0001 122	0.34 0.0016 84	0.39 0.0005 77	0.52 <.0001 122	0.25 0.0183 87	0.37 0.0008 77	1.00 122	0.84 <.0001 109	0.57 <.0001 77
Intention Post	0.19 0.0429 109	0.38 0.0002 89	0.33 0.0040 75	0.51 <.0001 109	0.43 <.0001 85	0.41 0.0003 75	0.46 <.0001 109	0.39 0.0001 89	0.39 0.0005 75	0.84 <.0001 109	1.00 111	0.64 <.0001 75
Intention FU	0.24 0.0375 77	0.27 0.0165 78	0.32 0.0033 81	0.30 0.0085 77	0.33 0.0032 76	0.39 0.0003 81	0.31 0.0059 77	0.27 0.0176 78	0.33 0.0029 81	0.57 <.0001 77	0.64 <.0001 75	1.00 81

Hypothesis 3.

A multiple linear regression model was used to predict intention at each study timepoint using TPB constructs and demographics as independent variables. At time 0 (pre-intervention), subjective norm (B=0.16, p<0.05) and perceived behavioral control (B=0.21, p<0.05) significantly predicted intention. Subjective norm (B=0.11, p<0.05) and perceived behavioral control (B=0.14, p<0.05) also predicted intention at time 1 (pre-intervention for WC, post- intervention for II). At time 2 (post-intervention for WC only), only perceived behavioral control predicted intention (B=0.23, p<0.05). Subjective norm (B=0.12, p<0.05) predicted intention at time 3 (follow-up for II only). Years of service (B =-0.10, p<0.05), district enrollment (B=- 0.0001, p<0.05), and having helped an adolescent quit tobacco in the past year significantly predicted intention (B=5.08, p<0.05) at time 3. At time 4 (follow-up for WC only), subjective norm (B=0.17, p<0.05) and perceived behavioral control (B=0.26, p<0.05) predicted intention. See Table 9 for a complete list of regression coefficients and adjusted R2 and F statistic values at all timepoints.

Table 9. Multiple Linear Regression Model Predicting Intention at Each Timepoint Using TPB Constructs as Predictors

	Unstandardized Coefficients		t	Sig.	95% Confidence Limits	
	B	Std. Error			Lower Bound	Upper Bound
Time 0 (Adj R2=0.44; F(7)=12.66, p<0.0001)						
(Constant)	-2.46	2.82	-0.87	0.39	-8.06	3.14
Attitude	0.06	0.06	1.09	0.28	-0.05	0.18
Subjective Norm	0.16	0.03	4.93	<.0001	0.09	0.22
PBC	0.21	0.05	4.24	<0.0001	0.11	0.30
Education	0.20	0.11	1.82	0.07	-0.02	0.41
Years of Service as a School Nurse	-0.02	0.03	-0.70	0.49	-0.07	0.03
District Enrollment Size	-0.00005	0.00003	-1.70	0.09	-0.0001	0.000008
Helped an Adolescent Quit in Past Year	0.54	0.85	0.63	0.53	-1.15	2.22
Time 1 (Adj R2=0.25; F(7)=5.11, p<0.0001)						
(Constant)	0.60	2.72	0.22	0.83	-4.81	6.01
Attitude	0.06	0.06	0.92	0.36	-0.07	0.19
Subjective Norm	0.11	0.04	2.67	0.01	0.03	0.19
PBC	0.14	0.06	2.46	0.02	0.03	0.25
Education	0.04	0.13	0.28	0.78	-0.23	0.30
Years of Service as a School Nurse	0.02	0.03	0.71	0.48	-0.04	0.08

	Unstandardized Coefficients		t	Sig.	95% Confidence Limits	
	B	Std. Error			Lower Bound	Upper Bound
Helped an Adolescent Quit in Past Year	0.80	1.07	0.75	0.46	-1.32	2.92
Time 2 (Adj R2=0.34; F(7)=4.26, p=0.0015)						
(Constant)	-2.77	3.29	-0.84	0.41	-9.45	3.90
Attitude	0.07	0.08	0.87	0.39	-0.10	0.24
Subjective Norm	0.13	0.07	1.87	0.07	-0.01	0.27
PBC	0.23	0.11	2.10	0.04	0.01	0.45
Education	0.21	0.21	0.99	0.33	-0.22	0.64
Years of Service as a School Nurse	0.05	0.05	1.04	0.31	-0.05	0.14
District Enrollment Size	-0.00006	0.00005	-1.38	0.18	-0.0002	0.000003
Helped an Adolescent Quit in Past Year	-0.009	1.51	-0.01	1.00	-3.08	3.06
Time 3 (Adj R2=0.6; F(7)=7.53, p=0.001)						
(Constant)	2.26	3.85	0.59	0.56	-5.73	10.25
Attitude	0.09	0.13	0.64	0.53	-0.19	0.36
Subjective Norm	0.12	0.06	2.08	0.05	0.0002	0.23
PBC	0.01	0.11	0.07	0.95	-0.22	0.23
Education	0.32	0.21	1.55	0.14	-0.11	0.74
Years of Service as a School Nurse	-0.10	0.04	-2.77	0.01	-0.18	-0.03
District Enrollment Size	-0.0001	0.00005	-2.08	0.05	-0.0002	-0.0000004

	Unstandardized Coefficients		t	Sig.	95% Confidence Limits	
	B	Std. Error			Lower Bound	Upper Bound
Time 4 (Adj R2=0.53; F(7)=6.96, p<0.0001)						
(Constant)	-3.50	3.98	-0.88	0.39	-11.63	4.63
Attitude	0.06	0.08	0.71	0.48	-0.11	0.23
Subjective Norm	0.17	0.06	2.78	0.01	0.04	0.30
PBC	0.26	0.09	2.85	0.008	0.07	0.45
Education	0.18	0.17	1.04	0.31	-0.18	0.55
Years of Service as a School Nurse	0.08	0.05	1.65	0.12	-0.02	0.18
District Enrollment Size	-0.0001	0.00004	-2.34	0.03	-0.0002	-0.00001
Helped an Adolescent Quit in Past Year	-2.58	2.08	-1.24	0.22	-6.82	1.66

Hypothesis 4.

Another multiple linear regression analysis was conducted to determine if attitude, subjective norm, and perceived behavioral control at pre-intervention predicted intention to help adolescents quit tobacco at post-intervention, while controlling for demographic variables. The adjusted R2 was 0.34, indicating that the model explains 34% of the variability in intention at post-intervention. The F statistic was 7.89 ($p<0.0001$). Attitude did not predict intention; however, subjective norm ($B=0.12$, $p<0.05$), perceived behavioral control ($B=0.18$, $p<0.05$), and district enrollment ($B=<-0.0001$, $p<0.05$) at pre-intervention significantly predicted intention at post-intervention. See Table 10 for a complete list of regression coefficients predicting intention at post-intervention.

Table 10. Multiple Linear Regression Model Predicting Intention at Post-Intervention Using Pre-Intervention TPB Constructs as Predictors

	Unstandardized Coefficients		t	95% Confidence Limits		
	B	Std. Error		Sig.	Lower Bound	Upper Bound
Time 0						
(Constant)	-0.14	3.33	-0.04	0.97	-6.75	6.47
Attitude	0.06	0.07	0.91	0.37	-0.08	0.20
Subjective Norm	0.12	0.04	3.23	0.002	0.05	0.20
PBC	0.18	0.06	2.81	0.01	0.05	0.30
Education	0.08	0.13	0.63	0.53	-0.18	0.34
Years of Service as a School Nurse	-0.03	0.03	-0.92	0.36	-0.09	0.03
District Enrollment Size	-0.0001	0.00003	-2.03	0.045	-0.0001	-0.000001
Helped an Adolescent Quit in Past Year	1.35	1.04	1.30	0.20	-0.72	3.41

Hypothesis 5.

An additional multiple linear regression analysis was conducted to determine if attitude, subjective norm, and perceived behavioral control at pre-intervention predicted intention to help adolescents quit tobacco at four week follow-up, while controlling for demographic variables. The adjusted R2 was 0.27, indicating that the model explains 27% of the variability in intention at follow-up. The F statistic was 4.52 ($p=0.0004$). Subjective norm and perceived behavioral control did not predict intention; however, attitude ($B=0.20$, $p<0.05$) and district enrollment ($B=-0.0001$, $p<0.05$) at pre-intervention significantly predicted intention at follow-up. See Table 11 for a complete list of regression coefficients predicting intention at follow-up.

Table 11. Multiple Linear Regression Model Predicting Intention at Follow-Up Using Pre-Intervention TPB Constructs as Predictors

	Unstandardized Coefficients		t	Sig	95% Confidence Limits	
	B	Std. Error			Lower Bound	Upper Bound
Time 0						
(Constant)	-3.99	4.44	-0.90	0.37	-12.87	4.89
Attitude	0.20	0.10	2.13	0.04	0.01	0.39
Subjective Norm	0.06	0.05	1.19	0.24	-0.04	0.15
PBC	0.12	0.08	1.59	0.12	-0.03	0.28
Education	0.13	0.17	0.77	0.45	-0.21	0.47
Years of Service as a School Nurse	0.07	0.04	1.90	0.06	-0.004	0.14
District Enrollment Size	-0.0001	0.000004	-3.35	0.001	-0.0002	-0.00005
Helped an Adolescent Quit in Past Year	0.43	1.51	0.28	0.78	-2.59	3.44

CHAPTER V

DISCUSSION

The following chapter will provide a summary of this study, discuss the implications of the results provided in Chapter 4, discuss the limitations of the study, and provide recommendations for future research. In addition, this chapter will provide concluding remarks on the development and evaluation of ACES, a program designed to enhance school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent tobacco cessation services.

Summary

A substantial amount of research supports the provision of adolescent tobacco cessation services. In particular, school nurses are situated to effectively provide these services in the school-based setting. However, few evidence-based adolescent cessation tools and trainings exist, and none that met the needs of the Missouri Department of Health and Senior Services and the Missouri State School Nurse Consultant. After an extensive needs assessment and systematic literature review, the ACES toolkit and training were developed to fill this gap. The Theory of Planned Behavior served as a guide for both the development and the evaluation of ACES.

The development of the toolkit and training are detailed in the methods section and may serve as a guide for the development of future evidence-based health programs for the school setting. The ACES training was a brief, 30 minute video recording covering the content of the ACES toolkit. The training was evaluated using an experimental study

design.

A total of 122 school nurse participants completed the pre-intervention questionnaire (time 0). Participants were then randomized to immediate intervention (II) or waitlist control (WC). The II group received the intervention and post-intervention questionnaire at time 1 (N=48), while the WC group completed a second pre-intervention questionnaire (N=58). The WC group completed the intervention and post-intervention questionnaire at time 2 (N=53). Each group also received a four-week follow-up questionnaire (time 3 for II, N=39; time 4 for WC, N=42). The TPB-ACES questionnaire assessed theory constructs (attitude, subjective norm, perceived behavioral control, and intention) at each timepoint.

The majority of participants were white (93%) and female (99%), and the mean participant age was 48 years. Most participants held RN staff positions (60%), and the mean years of service as a school nurse was 9 years. School district enrollment ranged from 146 to 25,000 (M=6,595, SD= 7,700), and 93% of participants worked in public schools. Only 6% of participants had previous tobacco cessation training, and 9% reported helping an adolescent quit tobacco in the past year.

Prior to the main analyses, reliability of the TPB construct items at pre-intervention, post-intervention, and follow-up were assessed using Cronbach's alpha. Results indicated that items should be dropped from attitude, subjective norm, and perceived behavioral control in order to increase internal consistency. The resulting alpha levels ranged from 0.72-0.90 for attitude (N=7), 0.85-0.90 for subjective norm (N=5), 0.66-0.77 for perceived behavioral control (N=5), and 0.82-0.89 for intention (N=2), depending on the timepoint. These are considered acceptable alpha levels for social

science research (Osborn & Waters, 2002). These final reduced TPB-ACES construct scales were used for all study analyses.

Paired sample T-tests of TPB constructs from pre-intervention to post-intervention found a significant decrease in mean attitude scores (45.7 vs 44.4; $p<0.05$) and a significant increase in mean perceived behavioral control scores (22.7 vs 23.8; $p<0.05$). The significant increase in perceived behavioral control mean scores persisted from pre-intervention to follow-up (22.7 vs 23.5, $p<0.05$). Effect sizes were small. There were no significant differences between the WC and II groups at time 1 (pre-intervention for WC, post-intervention for II) on theory construct scores. Effect sizes at time 1 were also small.

A multiple linear regression analysis was conducted to determine if theory constructs at pre-intervention predicted intention at post-intervention, while controlling for demographic variables. Attitude did not predict intention; however, subjective norm ($B=0.12$, $p<0.05$), perceived behavioral control ($B=0.18$, $p<0.05$), and district enrollment ($B<-0.0001$, $p<0.05$) at pre-intervention significantly predicted intention at post-intervention. An additional multiple linear regression analysis was conducted to determine if theory constructs at pre-intervention predicted intention at four week follow-up, while controlling for demographic variables. Subjective norm and perceived behavioral control did not predict intention; however, attitude ($B=0.20$, $p<0.05$) and district enrollment ($B=-0.0001$, $p<0.05$) at pre-intervention significantly predicted intention at follow-up.

Discussion

Several organizations working on adolescent health initiatives voiced the need and desire for adolescent tobacco cessation tools and training, including: the Missouri Department of Health and Senior Services (DHSS) Comprehensive Tobacco Control Program, the DHSS State School Nurse Consultant, Asthma Ready Communities, the Missouri Association of School Nurses, and the Missouri Coordinated School Health Coalition. The current study sought to fill this gap. First, a comprehensive needs assessment of Missouri school nurses was conducted along with a systematic review of the existing literature on adolescent tobacco cessation programs and studies. The results of the needs assessment and systematic review demonstrated the importance of cessation services for improving adolescent health and the need for practical, evidence-based resources tailored for use by school nurses. The Theory of Planned Behavior was selected to guide the development of ACES due to its utility in predicting individual-level health behaviors and health care professionals' adoption of specific programs and practices.

Together, theory, the needs assessment, and the systematic review guided the development of the ACES toolkit. The toolkit was extensively reviewed by experts in the fields of school nursing, adolescent health, and tobacco cessation. A small pilot test of the toolkit indicated its potential effectiveness for use with school nurses statewide and warranted the current evaluation study. A brief online video training covering the content of the ACES toolkit was developed and evaluated using an experimental design.

Items on the TPB-ACES questionnaire were developed to measure the constructs: attitude, subjective norm, perceived behavioral control, and intention using the TPB

questionnaire development guidelines set forth by Ajzen (2013). Reliability analyses guided the development of scales for each construct. Each scale was found to reliable at pre-, post-, and following the intervention, with Cronbach's alpha level ranging from 0.66 to 0.90. In addition, reliability alpha levels increased for each construct from pre-intervention to post-intervention and increased again at follow-up, indicating that the TPB-ACES questionnaire is reliable both in the short-term and in the intermediate, and participants can be reliably reassessed at future timepoints.

Paired samples T-test analyzed the effect of the intervention on theory constructs from pre-intervention to post-intervention and follow-up. Attitude scores decreased from pre-intervention to post-intervention. On the other hand, perceived behavioral control scores significantly increased from pre- to post-intervention and remained significantly higher than pre-intervention scores at four-week follow-up. School nurses' perceived behavioral control was significantly enhances as a result of the ACES training.

Acceptability and satisfaction with ACES was measured at post-intervention and at follow-up. Mean acceptability and satisfaction scores were high at post-intervention with a slight drop at follow-up. Mean acceptability scores ranged from 5.5-6.5, and mean satisfaction scores ranged from 5.9-6.0 (both on scales of 1-7, with 7 indicating high acceptability/satisfaction). These findings provide evidence that the training was practical, accessible, and useful, as requested by school nurses during the needs assessment.

According to the TPB, intention precedes behavior, and we can influence intention through attitude, subjective norm, and perceived behavioral control (Ajzen, 1991). A meta-analysis conducted by Sheeran et al. (2016) determined that experimentally induced changes in attitude, subjective norm, and perceived behavioral control all led to medium-

sized changes in intention (d+= 0.48, 0.49, and 0.51, respectively) and produced small to medium-sized changes in behavior (attitude d+ = 0.38, norm d+ =0.36, control d+ = 0.47). This lends evidence to the effectiveness of interventions designed to enhance attitude, subjective norm, and perceived behavioral control in promoting health behavior change.

To test the effect of intervention over control, the two groups' TPB construct mean scores were compared at time 1 (post-intervention for II, pre-intervention for WC). Although the two groups did not differ statistically, the II nurses' reported slightly higher mean scores compared to the WC nurses for each construct (attitude: 45.7 vs 44.9; subjective norm: 23.3 vs 22.1; perceived behavioral control: 24.2 vs 22.6; and intention: 9.2 vs 8.8, for II and WC, respectively). Although this brief intervention did not statistically improve TPB constructs, this study may provide evidence of slight gains in these areas as a result of the intervention. The current study evaluated a brief, 30 minute online video training intervention. A larger sample size or a longer, more in-depth intervention may be necessary to demonstrate statistically significant gains.

Another goal of the present study was to examine the predictive utility of the TPB to measure intention as a proxy for actual changes in school nurses' behaviors in relation to providing adolescent tobacco cessation services. Attitude, subjective norm, perceived behavioral control, past behavior, and demographic factors accounted for 25-61% of the variance in nurses' intention to provide cessation depending on the timepoint. This is a strong prediction considering that a meta-analysis of 185 studies concluded that the TPB accounted for an average of 39% of the variance in behavioral intention (Armitage and Connor, 2001). Perceived behavioral control was the strongest predictor of intention at time 0, time 1, time 2, and time 4 (past behavior was the strongest predictor of intention at

time 3). If nurses perceive the use of ACES as easy and under their control, they may have increased intention to provide adolescent tobacco cessation services, and eventually may do so.

Correlational analyses demonstrated that each TPB construct was significantly and positively associated with itself at different timepoints (pre-intervention, post-intervention, and follow-up). In addition, most constructs were significantly and positively correlated with the other TPB constructs at pre-, post-, and following the intervention. Other studies of developed TPB questionnaires had similar findings (Lapkin et al., 2014; Talbot et al., 2015; Lin et al., 2016; Watanabe et al., 2015; Wigginton et al, 2016; Lee et al., 2016; Bohon et al., 2016). This further demonstrates the utility of the TPB-ACES questionnaire developed for this evaluation study and the use of the TPB-ACES for evaluating school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent cessation services.

A multiple linear regression model predicting intention using TPB constructs and demographics as predictors at each timepoint was conducted. At time 0 and time 1, subjective norm and perceived behavioral control significantly predicted intention. Specifically, at time 0, for every one unit increase in subjective norm there is a 16% increase in intention, and for every one unit increase in perceived behavioral control there is a 21% increase in intention. At time 1, for every one unit increase in subjective norm there is an 11% increase in intention, and for every one unit increase in perceived behavioral control there is a 14% increase in intention. Perceived behavioral control also predicted intention at time 2. Specifically, at time 2, for every one unit increase in perceived behavioral control there is a 23% increase in intention. Years of service in school

nursing, district enrollment, and past behavior (providing adolescent cessation services) predicted intention at time 3. At time 3, for every one unit increase in subjective norm there is a 12% increase in intention. Also at time 3, for every one unit increase in years of service in school nursing there is a 10% decrease in intention, and for every 1,000 student increase in district enrollment there is a 0.1 decrease in intention. At time 3, for every one unit increase in past behavior there is a 508% increase in intention. At time 4, subjective norm, perceived behavioral control, and district enrollment predicted intention. For every one unit increase in subjective norm there was a 17% increase in intention, and for every one unit increase in perceived behavioral control there was a 26% increase in intention at time 4. Also at time 4, for every 1,000 student increase in district enrollment, there was a 0.1 decrease in intention.

This aligns with the Theory of Planned Behavior. Generally, the more favorable the attitude and subjective norm with respect to a behavior and the greater the perceived behavioral control, the stronger an individual's intention is to perform the behavior (Ajzen, 1991). The finding that years of service as a school nurse and district enrollment predict intention to provide adolescent tobacco cessation services indicates that future interventions may be most successful with nurses who are new to the field of school nursing and are not already established in their practice, and school-nurse led tobacco cessation interventions may work best in smaller school districts.

Another multiple regression model used demographics and TPB constructs at pre-intervention to predict intention at post-intervention. The model explained 34% of the variance in intention at post-intervention. Subjective norm, perceived behavioral control, and district enrollment all predicted intention at post-intervention. For every one

unit increase in subjective norm at pre-intervention there was a 12% increase in intention at post-intervention, and for every one unit increase in perceived behavioral control at pre-intervention there was an 18% increase in intention at post-intervention. District enrollment was also significant in the model indicating that for every 1,000 student increase in enrollment at pre-intervention there was less than a 0.1 decrease in intention post-intervention.

A similar regression model used demographics and TPB constructs at pre-intervention to predict intention at four-week follow-up. The model explained 27% of the variance in intention at follow-up. Pre-intervention attitude and district enrollment significantly predicted intention at follow-up. For every one unit increase in attitude at pre-intervention there was a 20% increase in intention at follow-up. In addition, for every 1,000 student increase in district enrollment at pre-intervention there was a 0.1 decrease in intention at follow-up.

Limitations

A limitation of this study was that it examined intention, rather than actual behavior. However, according to the TPB, intention is assumed to be an immediate antecedent of behavior (Ajzen, 1991), and measures of behavioral intention are frequently used as a proxy for actual behavior (Eccles et al. 2006). Another limitation was that nurses self-selected to participate in the current study. Nurses who did not participate in the study may differ from those who did, which may bias the results. Specifically, nurses who are interested in adolescent tobacco cessation and nurses who are more receptive to web-based trainings may have been more likely to participate. As a result, the findings may not

be generalizable to all Missouri school nurses or other populations. The current study was also limited by its small sample size (pre-intervention N=122, post-intervention N=101, follow-up N=81). Future studies may benefit from recruiting larger samples in order to increase statistical power.

Recommendations for Future Research

This study provides evidence that the Theory of Planned Behavior can be reliably used to predict school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent tobacco cessation services. This add to the literature supporting the use of the TPB to predict healthcare professionals' adoption of specific health programs and practices. The finding that the TPB-ACES questionnaire is reliable both in the short-term and in the intermediate and that participants can be reliably reassessed at future timepoints provides a new option for evaluating healthcare professionals' intention to provide tobacco cessation services. Future research should test the TPB-ACES with larger groups of school nurses and more diverse school settings in order to improve generalizability. For example, nurses at private schools and nurses in geographic regions outside of Missouri were underrepresented in the current study. Future interventions could be personalized to meet the needs of different groups of nurses (e.g., those who are new to the field of school nursing versus those who are established in their practices, nurses with previous cessation training versus nurses without previous training) and differing school setting (e.g., small school districts versus large school districts, rural versus urban school settings). The TPB-ACES could also be adapted to evaluate intention to provide adolescent tobacco cessation services among other groups of

professionals (e.g., pediatricians, dentists, social workers, counselors). Expansions on the current study should also examine the reliability of the questionnaire at long-term follow-up, such as six or 12 months from baseline. Moreover, a long-term follow-up would allow for the measurement of actual behavior versus intention alone.

Little is known about the efficacy and acceptability of web-based trainings for school nurses. Only a few studies were identified which evaluated the use of online training with school nurses (Steele et al., 2013; Elgie et al., 2010; Clifton, 2001), and no online trainings for school nurse-led cessation were identified. The current study adds to the small evidence-base on evaluating online trainings for school nurses. In this study only 6% of participants had received previous tobacco cessation training. This finding confirms the existing gap and identified need for cessation training programs geared toward school nurses. This may also reinforce the conclusions from the needs assessment – school nurses face many barriers to participating in trainings, such as time, funds, and travel restrictions. School nurses in this study reported a high degree of acceptability and satisfaction with the ACES training, indicating that receiving training in an asynchronous, online modality is an acceptable to this population. Online training and educational programs, such as ACES, may serve to address training barriers by providing more flexible and accessible options for school nurses' continuing education.

School nurses' perceived behavioral control showed a significant increase from pre- to post-intervention as a result of this brief, online ACES training intervention. The provision of tobacco cessation training and tools, such as the ACES toolkit, may effectively enhance school nurses' perceived behavioral control over providing adolescent tobacco cessation services. Being able to provide trainings and evidence-based tools offers

tobacco cessation professionals with a new opportunity to partner with school nurses for the purpose of reaching an underserved population – adolescent tobacco users. Future interventions designed to improve school nurses' attitude, subjective norm, perceived behavioral control, and intention to provide adolescent tobacco cessation services should also explore the effects of a longer intervention and different training modalities (compared to a web-based 30 minute video training). For example, more in-depth and interactive training modules could be developed from the ACES toolkit and delivered in online and in-person formats. Future studies may also test for benefits of providing the ACES toolkit to school nurses prior to the training (versus post-training).

Conclusions

This study provides an understanding of Missouri school nurses' intention to provide adolescent tobacco cessation services, and may serve as a guide for developing other evidence-based health programs. To the researcher's knowledge, the current study was the first to investigate school nurses' intention to provide adolescent tobacco cessation services and the antecedents that predict this within the TPB. This study is strengthened by its longitudinal design and has important theoretical and practical implications for school nurses, tobacco cessation professionals, and adolescent tobacco users. This study indicated that the provision of adolescent tobacco cessation services by Missouri school nurses is uncommon; however, the current study also found moderate levels of intention to provide adolescent tobacco cessation services among school nurses at each timepoint (mean scores ranged from 8.9-9.5 on a scale of 2-14, with higher scores indicating higher intention). This lends support for the implementation of adolescent tobacco cessation

programs by school nurses in the school setting.

The developed TPB-ACES questionnaire works with school nurses and for measuring intention to provide adolescent tobacco cessation services. These findings have important implications for the development and implementation of strategies to enhance adolescent tobacco cessation programs for school nurses and for the future use of the TPB-ACES in the evaluation of educational and cessation interventions. The findings from the current study can assist in developing tailored tobacco cessation training for school nurses to increase attitude, subjective norm, perceived behavioral control, and intention, in order to improve access to evidence-based cessation services for adolescent tobacco users. It is important to focus future interventions on modifiable factors in school nurses' behavior. In this study the construct of perceived behavioral control was found to be the most important factor affecting nurses' intention to provide adolescent tobacco cessation services. Designing and implementing programs and educational interventions based on TPB with a focus on perceived behavioral control may increase nurses' adoption of these practices.

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APPENDIX A: ACES Toolkit

ACES

Adolescent Cessation in Every School

An evidence-based adolescent tobacco cessation toolkit for the school setting

www.cessationineveryschool.com

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
DHSS

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A special thanks to Eric Filcoff for the design of the ACES toolkit.

Testimony

Why the ACES toolkit?

"Missouri does not provide state funding for a formalized adolescent tobacco cessation program, therefore the programs are developed at a local/community level where funding and program content may be inadequate. This toolkit can be used in schools where interaction with students during the school day is consistent and provided by a school nurse."

"Due to Missouri's failing grade in addressing youth tobacco use, it is time that school districts take an active role in assisting our kids to quit. This toolkit provides an easy-to-follow format that does not place an undue burden on school staff to implement. It is evidence based and contains all pieces necessary in assisting youth, as well as adults, to be successful in their attempt to quit the use of tobacco products."

"It is a helpful resource for school nursing and other school personnel."

"The rate of tobacco use in Missouri needs to be effectively addressed. One approach is to assist adolescents with tools to quit. The toolkit is designed to assist the School Nurse or other school personnel to help students create a plan to quit, and assist with support the students will need through the process."

"After serving as a cessation coach, I find this toolkit to be incredibly thorough, comprehensive and successfully provides all the necessary pieces to implement a cessation program."

"Currently, the Missouri school smoking rate is higher than the national average. This toolkit provides schools with an evidence based approach to help our teens to quit smoking."

"This is an easy, low-cost way to make the teens in Missouri healthier."

"This toolkit will take little prep time to utilize in group or one-on-one settings. More important, it does not require that the user attend an off-site training or purchase an expensive curriculum prior to implementing."

Importance of adolescent tobacco cessation

"Our youth are the future of our state. In addition to the research that links improved health with improved academic success, the physical effects on an adolescent's body can be long lasting. The sooner the cessation, the lower the risk of an adolescent becoming an adult tobacco user."

"The adolescent brain is extremely susceptible to nicotine addiction. The vast majority of adult smokers started before age 18 and nearly all smokers before age 25. Yet, research is limited on effective strategies for helping youth to quit."

"Tobacco use has been linked to many health issues that lead to death. An effective tobacco cessation intervention during adolescence can prevent nicotine addiction and severe health consequences later as an adult."

"Nicotine is addictive and tobacco in general increases the risk of pulmonary and cardiovascular diseases. Tobacco cessation will improve the overall health of an adolescent."

"Adolescents have the right to live a life free from the influence of Big Tobacco. It is the responsibility of adults to assist youth in learning all facts related to tobacco use as well as long-term health effects, thus lessening a young person's chance of developing a tobacco-related illness."

"Adolescent tobacco cessation is important because evidence shows that the vast majority of current adult smokers experience initiation prior to the age of 18."

"If we can cut down on the number of children coming out of high school that are [tobacco users], we can make an impact on the health of many people in the State of Missouri."

"Youth are at an increased risk of becoming addicted to nicotine. By providing an adolescent tobacco cessation program in schools across Missouri, students will have access to quit assistance in a convenient location. Helping these students quit early on in their smoking career will decrease their growth in addiction throughout the years."

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Section 1:
Background

Overview

As professionals who work with youth, we strive to make our schools safe and healthy environments that promote learning, healthy behavior choices, and overall well-being. **We recognize that young people have to be healthy in order to be effective learners and grow into successful young adults.** We focus much of our time on educating and intervening with youth who are participating in risky behavior such as alcohol use, marijuana, methamphetamine and other substance use, and it is critical that we address tobacco use alongside these other substances. Although tobacco use is legal for adults over age 18 (or in some cities, age 21), it is the only product that, if used as intended, will ultimately kill half of the people who use it.[1] If you or someone you know has ever tried to quit tobacco, you know the challenge of breaking a nicotine addiction. As advocates for the health and education of young people, we cannot ignore tobacco use among this age group.

Nicotine addiction has no place in schools. Experimentation with tobacco and nicotine addiction almost always begins by the time young people graduate from high school.[2] This early exposure to nicotine and the resulting addiction negatively affects brain development in young people and has major implications for future tobacco use, engagement in other risky behaviors, and both short- and long-term adverse impact on health.[3] As professionals who work with youth on a daily basis in the school setting, we have an obligation to help young people live lives free from addiction.

According to the 2014 Missouri School Health Profile, only 17.9% of schools currently offer cessation services for students, with an additional 19.4% providing referrals for cessation services.[4] Schools that provide tobacco cessation for students will see immediate health benefits, and this is one of the most cost effective health services available.[4] The cessation tools and resources provided in this toolkit are grounded in theories of health behavior change, best practices for cessation and evidence-based literature, and have been tailored for use with adolescents. **These tools can be used for one-on-one interventions with adolescent tobacco users and emphasize building the coping skills that are needed to successfully quit tobacco.**

Who is this toolkit for?

This toolkit is for professionals who work with youth, especially in a school-based setting. This includes but is not limited to:

- School nurses
- Health aides
- Administration
- Faculty
- Counselors
- Social workers
- Health teachers
- Physical education teachers
- Coaches
- Resource officers

Who do these tools benefit?

Adolescent tobacco users, ages 13-18

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Nicotine Addiction

Nicotine addiction can occur as quickly as a few days after experimental smoking.[1] The adolescent body and brain are still developing, making youth especially vulnerable to addiction.[2] Nicotine has lasting and adverse consequences for the brain.[2] Once nicotine enters the body it makes its way to the brain. Nicotine molecules then attach to receptors in the brain, causing the release of the feel-good neurotransmitter dopamine. This spike of dopamine produces self-confidence, euphoria and alertness. However, regular use of tobacco and exposure to nicotine leads to over-stimulation of these brain receptors. In response to over-stimulation the brain down-regulates these receptors, making them less sensitive. The only thing that brings a tobacco user's brain back to a near normal balance again is further use of tobacco and more nicotine. This effect is heightened in the developing brains of adolescents - their receptors ramp up and down much faster, more thoroughly and more permanently than adults.[3]

Tobacco use is often an indicator of engagement in other risky behaviors. Research has shown that teen tobacco users are more likely to use alcohol and illegal drugs than are non-users.[4] Tobacco users are also more likely to: get into fights, carry weapons, attempt suicide, suffer from mental health problems such as depression and engage in high-risk sexual behaviors.[5] This doesn't necessarily mean that tobacco use caused these behaviors, but they're more common in teens who use tobacco. Tobacco use is a warning sign that a young person needs support and services.

The younger a person is when he or she begins using tobacco, the higher the risk that this youth will become a daily tobacco user and be less likely to successfully quit.[6] Symptoms of addiction, such as strong cravings, irritability and anxiety can appear in youth within just days or weeks of occasional smoking, even before daily smoking is established.[1]

Adolescents underestimate the addictiveness of nicotine.[7] Compared to nonsmokers, adolescent smokers (occasional and daily) are more likely to believe that they can quit at any time.[7] Not surprisingly, adolescent tobacco users often make unassisted quit attempts and do not rely on best practices for cessation when doing so. In fact, only 4% of adolescent smokers successfully quit each year,[9-10] which is lower than the rate of successful quit attempts among adult smokers.[11]

Research finds that 48% of young people make a quit attempt while in high school and fail due to the addictiveness of nicotine.[2] **Moreover, 75% of these youth will continue smoking into adulthood despite their desire to quit.**[2]

Not only is tobacco physiologically addicting due to the drug nicotine, the process of using tobacco also becomes a learned habit. Just as one learns to use tobacco over a period of time, it will take time to unlearn the habit. These learned behaviors combine with nicotine to make a highly addictive practice. In fact, when health care professionals rank the addictiveness of drugs, nicotine tops the list – higher than methamphetamine and heroin.[12]

Nicotine dependence results from a combination of physiological and psychological factors, and effective cessation approaches should address both. For example, physical dependence can be addressed by slowly reducing the amount of tobacco used over a period of time or by using a Food and Drug Administration (FDA) approved nicotine replacement therapy product (see page 35). At the same time, the psychological and behavioral aspects of addiction should be addressed by identifying triggers and developing coping strategies, which can be accomplished through the use of a quit plan (see page 23).

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Types of Tobacco and Nicotine Products

All tobacco products contain the drug nicotine and can lead to addiction and harm. Combustible tobacco products (i.e., tobacco that is lit or heated) top the list as the most dangerous. Tobacco smoke contains over 7,000 chemicals; more than 70 of these are known to cause cancer.[1]

Cigarettes

Cigarettes are thin cylinders of finely cut tobacco and chemical additives rolled in paper. They are sold in packs of twenty. They may or may not have a filter on the end. All flavored cigarettes are banned in the U.S. except menthol. They are often one of the most expensive tobacco products.

Cigars/little cigars/cigarillos/blunts

The only difference between a cigarette and a cigar is that a cigarette is wrapped in paper (often white in color) and a cigar is wrapped in whole or in part in tobacco leaf (often brown in color). A cigar can come in any size, from very large to as small as a cigarette. Cigars can be sold individually, in packs of twenty resembling cigarettes or any other quantity. Cigars are sold in hundreds of flavors such as grape, cherry and peach. They are not taxed as highly as cigarettes and may be very inexpensive. One cigar can be purchased for as little as $0.50.

While cigarette consumption has been declining among youth over the past several decades, cigar use is increasing. Cigars are addictive, contain the same harmful and carcinogenic ingredients as cigarettes and result in the same adverse health outcomes.

Hookah/water pipe

Similar to cigars, hookah use is on the rise. Cheap prices and youth-appealing flavors are a major contributor to the rise in hookah smoking. Hookahs are a type of pipe that are often smoked socially among young people. Hookahs have a bowl where sticky, flavored tobacco (often called shisha) is heated by burning coals that are placed in a larger bowl directly beneath the tobacco bowl or via coals placed on top of the tobacco bowl. The user inhales the tobacco smoke through a mouthpiece, which is connected to a hose. The tobacco smoke is then pulled through the pipe stem and through the vase or base chamber, which is filled with water. The water cools the tobacco smoke before it is inhaled by the user. There are many misperceptions about the harms of hookah. Hookah smoke contains the same harmful carcinogens as cigarette smoke and can addict users. During a one-hour hookah smoking session, users typically take 200 puffs (compared to only 10-20 puffs for a cigarette), the equivalent of smoking a pack of cigarettes.

Smokeless tobacco

Smokeless tobacco products are not a safe alternative to cigarette smoking. Smokeless tobacco contains nicotine and cancer-causing chemicals.

Chew/dip

Chew is loose leaf or 'plugs' of tobacco placed between the lower gum and cheek. The nicotine and other chemicals are absorbed through the lining of the mouth. The user has to spit out the brown saliva that accumulates during use. Chew tobacco is often sold in circular cans and can come in flavors such as green apple.

Snus

Snus is sold in round or oblong shaped cans. Each can contains several small teabag-like pouches filled with loose tobacco. Users place a snus pouch in their mouth between the gum and cheek, and the chemicals and nicotine are absorbed through the lining of the mouth. Unlike chew tobacco, most snus users place the pouches next to their upper gums, instead of lower gums. There are no saliva glands in the upper gums and this eliminates the need to regularly spit, as seen with chew. Because of this and the small size of the pouches, snus use is very discrete and it is difficult to tell if a young person is "snusing". Snus use carries the same health risks as all smokeless tobacco products.

Dissolvable products

These are available as orbs or pellets (resembling candy), sticks (resembling toothpicks) or strips (resembling breath strips). All dissolvable products contain nicotine and they are chewed or sucked on until they dissolve in the mouth and the juices are swallowed. They are sold in flavors such as mint. These products are relatively new and little research has been conducted on them. Because of their candy-like appearance, they may be especially targeted toward youth.

Electronic nicotine delivery systems/e-cigarettes/mods/vape pens/ hookah pens

History

Electronic nicotine delivery systems (ENDS) are composed of a battery-operated heating element, a cartridge, chamber or tank that contains the nicotine or other chemicals and an atomizer (sometimes called a cartomizer), which when heated, converts the contents of the cartridge into an aerosol (usually referred to as a "vapor") which is then inhaled by the user. ENDS may look like a cigarette or cigar or look like everyday items such as pens and USB memory sticks.[2] Users (called "vapers") can choose from several nicotine strengths and thousands of flavorings.[3]

The first electronic cigarette was patented in 2004 and the popularity of these devices, world-wide and in the United States, has increased dramatically ever since.[4] Most brands are marketed as a tobacco-free alternative to conventional cigarettes that can be used in nonsmoking areas. The FDA does not currently allow e-cigarettes to be marketed for smoking cessation.

Use by adolescents

While many states (including Missouri) prohibit the use and sale of ENDS to those under age 18, a recent report from the Centers for Disease Control and Prevention (CDC) found that more than a quarter of a

million youth who had never smoked a cigarette had used an ENDS in 2013.[5] This is a threefold increase from 2011. Tim McAfee, Director of the CDC's Office on Smoking and Health said,

"We are very concerned about nicotine use among our youth, regardless of whether it comes from conventional cigarettes, e-cigarettes, or other tobacco products."[5]

This data comes from the National Youth Tobacco Survey of middle and high school students and shows that youth who have never used conventional cigarettes but who use e-cigarettes are almost twice as likely to intend to smoke conventional cigarettes compared to youth who have never used e-cigarettes.[5]

In addition, because these products are so new, many school and community smokefree policies do not currently prohibit their use indoors. School district policies should be strengthened to include ENDS products (See page 44).

Secondhand aerosol

Instead of referring to the smoke emitted from ENDS as a "vapor" (a term used by the tobacco industry), researchers have more accurately identified this as a chemical aerosol. Secondhand aerosol contains nicotine, ultrafine particles and low levels of toxins that are known to cause cancer.[6] Secondhand aerosol exposure causes eye, throat and airway irritation, damages lung tissues and may exacerbate or lead to respiratory illnesses such as asthma.[6]

Potential risks

The FDA has not evaluated any ENDS for safety or effectiveness as a cessation device.[2] **According to the FDA website, e-cigarettes have not been fully studied and consumers do not have information about the potential risks of use or how much nicotine or other potentially harmful chemicals are being inhaled.**[7] There is also concern that ENDS may increase nicotine addiction among youth and lead young people to initiate other tobacco product use.[2,7] As of now ENDS are unregulated by the FDA, and as a result, they can be marketed on television, radio, billboards, online, at sporting events, in mall kiosks, and in many other ways reminiscent of tobacco advertising in previous decades. The Truth Initiative (formerly the American Legacy Foundation) also cautions that any potential harm reduction benefits of ENDS use may be offset if ENDS encourage the initiation of use of conventional tobacco products or promotes dual product use.[8] **As a result, it is important to educate young people about the risks of using ENDS.**

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Tobacco Industry Marketing and Youth

In 2006, U.S. District Judge Gladys Kessler issued a final judgment in the U.S. government's lawsuit against the major tobacco companies. This lawsuit convicted the tobacco companies as racketeers for defrauding the American people by lying for decades about the health risks of smoking and their marketing to children.[1]

Regarding the tobacco industry's targeting of youth, Judge Kessler said:

"From the 1950s to the present, different defendants, at different times and using different methods, have intentionally marketed to young people under the age of twenty-one in order to recruit 'replacement' smokers to ensure the economic future of the tobacco industry."
(Final Opinion, United States v. Philip Morris)[2]

Tobacco industry CEO's testifying that "Nicotine is not addictive." Hearing on the Regulation of Tobacco Products House Committee on Energy and Commerce Subcommittee on Health and the Environment - April 14, 1994[3]

To maintain profits, tobacco companies must replace customers who quit tobacco or die from tobacco-related diseases with new smokers. "Replacement smokers" are often youth who are attracted to tobacco products through expensive marketing campaigns that use images that are highly appealing to young people.[4]

The tobacco industry spends $9.6 billion dollars every year ($26 million dollars per day) to promote their addictive and deadly products, of which $359.8 million is spent in the state of Missouri.[5] Many of their marketing efforts are aimed at youth.[6-7]

While tobacco companies may claim that they have stopped targeting youth with their marketing, evidence shows that they continue to advertise in ways which target vulnerable, underage populations. In fact, one study found that 91% of middle school and 93% of high school students were exposed to tobacco ads in stores, in magazines or on the internet in 2011.[8] Internal tobacco industry documents, revealed as a result of lawsuits, show that the industry considers youth as young as 13 to be a key market. Here are a few industry quotes about marketing to kids.

Philip Morris: "Today's teenager is tomorrow's potential regular customer, and the overwhelming majority of smokers begin to smoke while still in their teens…The smoking patterns of teenagers are particularly important to Philip Morris."[8]

Lorillard Tobacco: "The base of our business is the high school student."[9]

U.S. Tobacco: "Cherry Skoal is for somebody who likes the taste of candy, if you know what I'm saying."[10]

R.J. Reynolds: "We reserve the right to smoke for the young, the poor, the black and stupid."[11]

Moreover, despite the ban on flavored cigarettes, the tobacco industry continues to lure kids into nicotine with a wide assortment of sweet-flavored cigars, smokeless tobacco products, hookah tobacco and electronic nicotine delivery systems (ENDS; aka e-cigarettes). Flavors range from fruit punch to watermelon to chocolate. A recent study found that nationwide, about 18% of all high school students reported using at least one flavored tobacco product in the past 30 days, far more than the 5.8% who reported using only non-flavored tobacco,[13] and among current users of any tobacco product, 70% of middle and high school students (representing 3.26 million young people) report using a flavored product in the past 30 days.[14] In 2014 alone, an estimated 1.58 million students used a flavored e-cigarette, 1.02 million used flavored hookah tobacco, 910,000 used flavored cigars, 900,000 used menthol cigarettes, and 690,000 used flavored smokeless tobacco products.[14]

According to one retired Missouri school nurse, "Teens listen when they realize they are being targeted." This information can be used to engage student tobacco users in dialogue about how the tobacco industry preys on young people and vulnerable groups, and this may change their feelings about tobacco use.

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Tobacco and Nicotine Use Initiation

Every day, more than 2,800 U.S. youth under age 18 try their first cigarette, and an additional 700 youth become new daily smokers.[1]

Most kids try smoking for the first time between sixth and seventh grade (ages 11-13).[2]

Nearly one in ten youth have smoked at least one whole cigarette before age 13.[3]

By the 10th grade, one out of every five students has tried smoking, and by the 12th grade, one out of three has tried smoking.[4]

More than one-third of all youth who ever try smoking a cigarette will become daily smokers before they leave high school.[5]

Research finds that 90% of adult smokers began smoking before age 18, and 2 out of 3 adult smokers report having become daily smokers before age 19.[6]

More than 250,000 youth who had never smoked a cigarette used an electronic nicotine delivery system (aka e-cigarette) in 2013.[7] **There is growing concern that initiation of these products is another pathway to nicotine addiction.**

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Missouri: By the Numbers

Every year 6,100 Missouri kids under the age of 18 become new daily smokers.[1] **The Missouri high school smoking rate is 11.0%[2], which is higher than the national average of 7.0%.**[3] [See Table 1]

Use of Electronic Nicotine Delivery Systems (ENDS; aka e-cigarettes) is much higher among Missouri middle school and high school students, compared to the national average.[2] [See Table 2]

Smokeless tobacco use in Missouri is also higher than the national average. **Among high school males in Missouri, smokeless tobacco use is 17.0%, compared to 9.9% nationally.**[3-4] [See Table 3]

In addition, the rate of middle school and high school students who have ever used tobacco in any form is much higher than the national average. [See Table 4]

Table 1. Current Cigarette Smoking

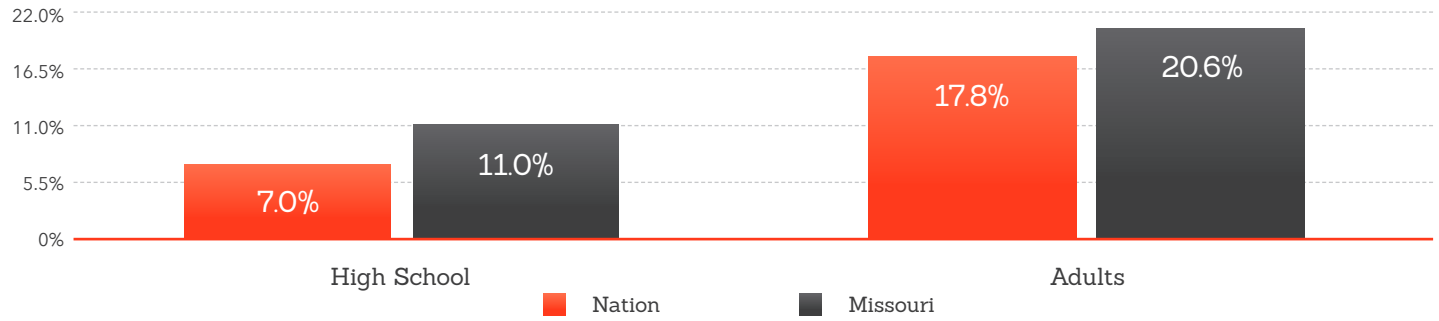

Table 2. Electronic Nicotine Delivery Systems

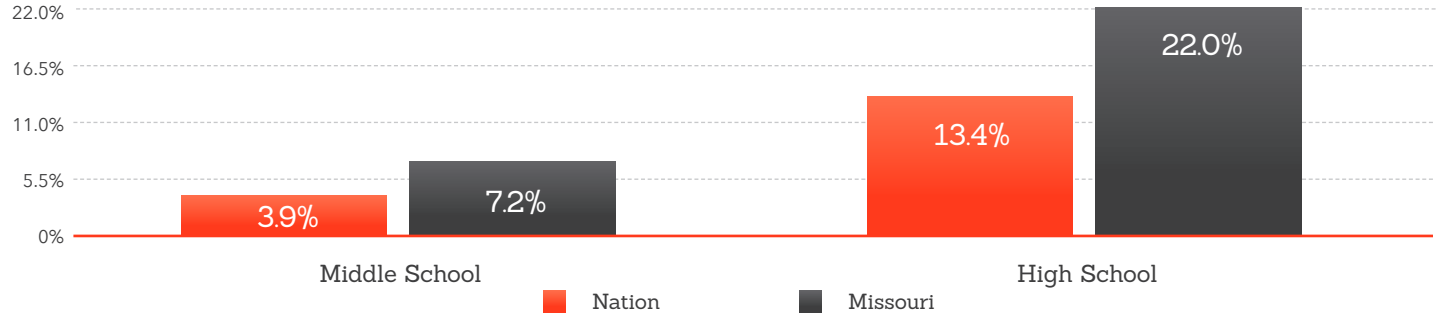

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Table 3. Current Smokeless Tobacco Use Among Males

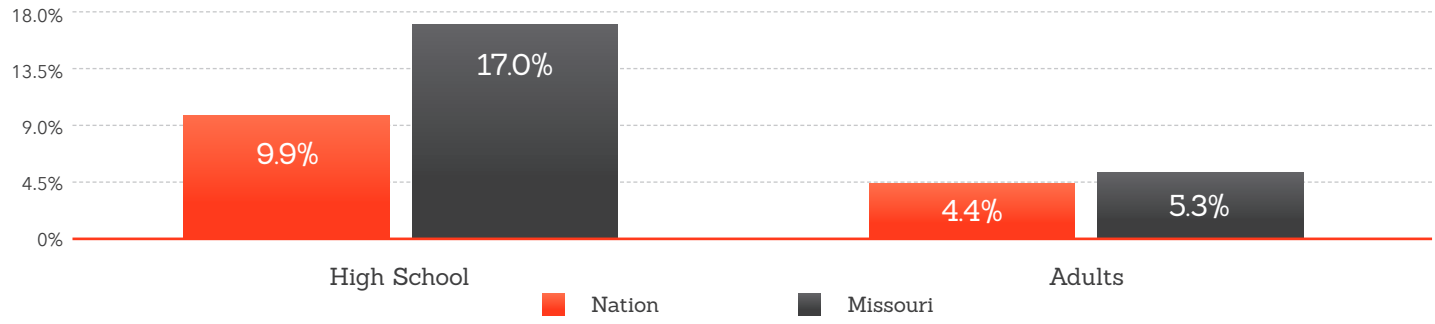

Table 4. Ever Use of Any Form of Tobacco

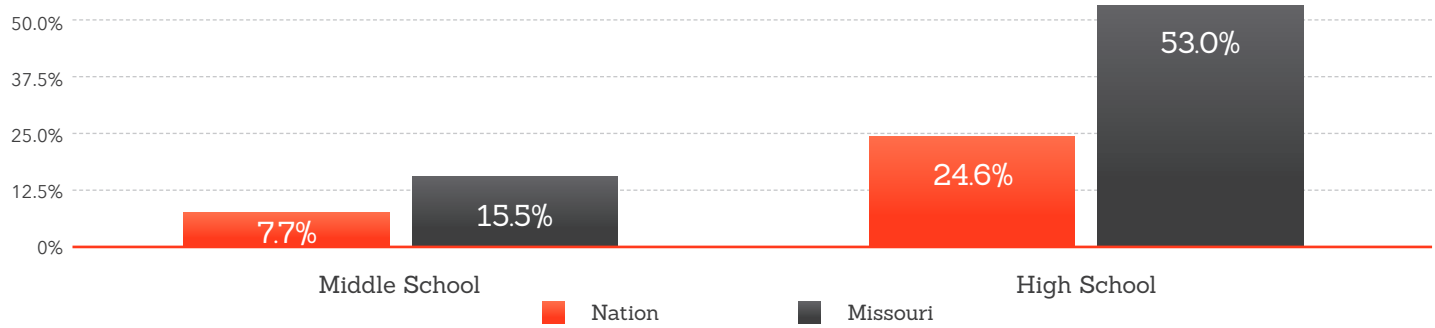

Table 2 References

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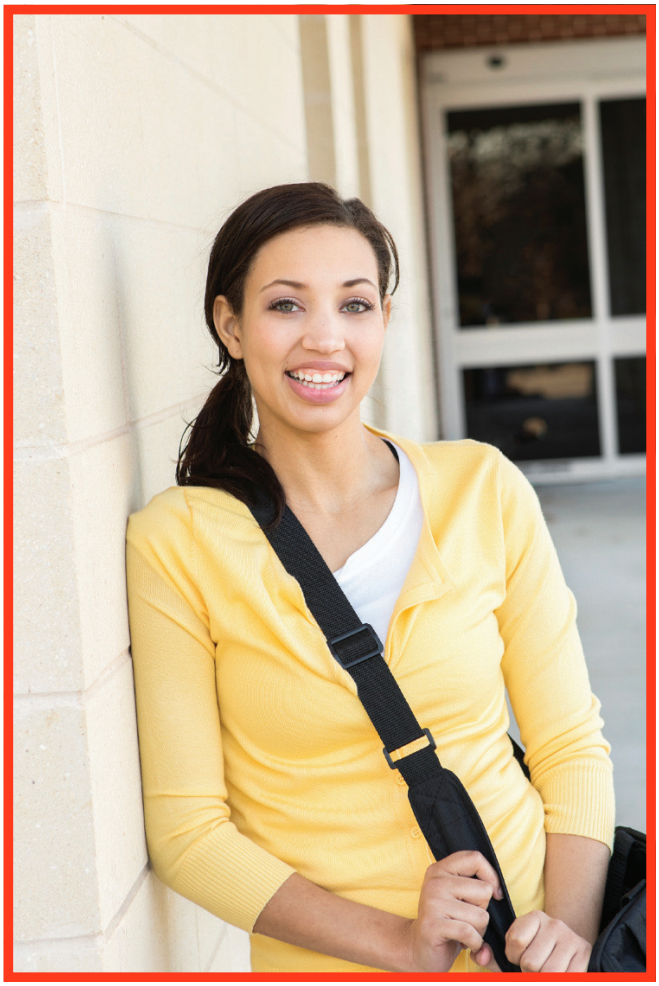
How Tobacco Harms Youth

It is important to understand the health and social consequences associated with tobacco use among young people. However, these lists should not be used to lecture or recite to young people. They provide a learning opportunity, and not all items on these lists may be of particular concern to any one young person. Everyone is uniquely motivated to quit tobacco use.



Short-term health consequences:[1-3]

- Chronic coughing
- Asthma attacks
- Emphysema
- Bronchitis
- Increased susceptibility to the influenza with more severe symptoms
- Mild airway obstruction and reduced lung function
- Shortness of breath and increased phlegm
- Higher resting heart rates
- Decreased athletic performance and endurance
- Headaches
- Vision problems and hearing loss
- Halitosis (bad breath)
- Stained teeth
- Reduced sense of smell
- Decreased overall health

Long-term health consequences:[2-3]

- Stunted lung growth (the lungs continue to grow until around age 20)
- DNA damage that can cause cancer
- Wrinkles
- Early cardiovascular disease (heart attacks and stroke)
- Damaged arteries (atherosclerotic lesions)
- Increased triglycerides
- Oral cancer
- Tooth decay and tooth loss (periodontal degeneration)

In addition to the health risks associated with smoking, using tobacco has negative impacts on a person socially. For some teens, these social consequences may be of more concern than health.[4]

Social consequences:[4]

- Smell of smoke on clothes, hair and breath
- Makes one less attractive to others
- Often limits potential romantic partners
- Sexual dysfunction in males
- Lowers the ability to smell and taste
- Less money to spend
- Risk of getting caught using tobacco in places where it isn't allowed
- Having to hide or lie to people about the habit
- Not being a good role model for younger friends and siblings
- Irritability and lack of concentration when prevented from using tobacco (see withdrawal symptoms on page 32)
- Less likely to be hired by employers
- Trouble finding an apartment to rent because landlords prefer to rent to non-tobacco users
- Taking more sick days from work and school
- Repeatedly having to go outside to use tobacco
- Non-tobacco using friends may spend less time with the youth

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Missouri is Falling Behind

When it comes to tobacco control efforts, Missouri is falling behind. The problem is three-fold:

First, the state does not fund any youth tobacco prevention programming. There is a widely held misconception that the state dedicates a portion of the funds from the Master Settlement Agreement (MSA) to this cause – as was the intention of the MSA. Sadly, the Missouri State Legislature does not use the MSA funding for this purpose. Any current prevention efforts taking place statewide in Missouri are the result of local, federal, and non-profit grant funding. This type of prevention funding is intermittent and falls far short of the CDC's best practices state spending recommendation. In 2014 Best Practices for Comprehensive Tobacco Control Programs, the CDC recommended that Missouri spend $72,900,000 on tobacco control. In 2016 the Missouri tobacco control program had $2,438,870 to spend, only 3.3% of the recommendation. Federal funds made up 96% of that total, with state general revenue contributing $107,380.[1]

To learn more about the Master Settlement Agreement, visit:

- Tobacco Control Legal Consortium, The Master Settlement Agreement, An Overview
  http://www.publichealthlawcenter.org/sites/default/files/resources/tclc-fs-msa-overview-2015.pdf

- Campaign for Tobacco Free Kids, Broken Promises to Our Children
  http://www.tobaccofreekids.org/microsites/statereport2015/

The second challenge in Missouri is the lack of a comprehensive smokefree indoor air law, which would prohibit indoor smoking in all workplaces, including bars and restaurants. Currently, Missouri is one of only 20 states without a comprehensive smokefree indoor air law.[2] The main purpose of smokefree laws and policies is to protect nonsmokers from secondhand smoke; however, research shows that these laws also have the added benefit of increasing overall cessation[3] and reducing smoking initiation among youth.[4]

Finally, Missouri ranks last with its tobacco tax, at only $0.17 per pack of cigarettes, compared to the national average of $1.69.[5] Many economic studies have documented that increases in the cigarette tax or price reduce adult and youth smoking.[6] For every 10% increase in the price of cigarettes, there is a 6-7% reduction in the number of youth who smoke.[6] Young people are especially sensitive to the price of tobacco products, and substantial tax increases are the most effective way to deter youth smoking. Having the lowest tobacco tax in the nation allows the rate of youth tobacco use in Missouri to remain high.

Taken together, the lack of youth prevention funding, the lack of a comprehensive statewide smokefree law, and the low tobacco tax are largely to blame for the high prevalence of adult and youth tobacco use in Missouri. In the 2015 State of Tobacco Control report, the American Lung Association gave Missouri a grade of "F" in each of the four categories considered: tobacco prevention, smokefree air, tobacco taxes, and access to cessation services.[1] Because of these challenges at the state level, efforts must be made at the local level to reduce tobacco use.

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Intention to Quit

A survey of 11-19 year-olds found that 82% of smokers are thinking about quitting.[1] In a longitudinal study of adolescent novice smokers it was found that the first serious desire to quit smoking was only 1.5 months after smoking initiation.[2] The first serious quit attempt occurred at 2.5 months from initiation. **Research finds that 48-77% of adolescent smokers have made a serious quit attempt.**[3-4]

Quit attempts by young people are often unplanned and unassisted[5], even though tobacco cessation programs double an adolescent's chances of successfully quitting.[6-7] **Adolescent smoking cessation programs, compared with control conditions, increase the probability of quitting by approximately 46%.**[6,8]

Regrettably, a national focus group of adolescents found that many young smokers did not consider tobacco use urgent or intense enough for professional help.[9] Perceptions of cessation programs were nonexistent or negative. Unfortunately, without assistance, three out of four will continue smoking into adulthood.[3] It is critical to educate adolescents about what cessation programming is, what it is not, why it is needed, how it can help and where it is offered.

To increase utilization, smoking cessation programs should be made available to adolescents in a variety of settings.[10] In addition, cessation programs need to address other tobacco products in addition to cigarettes.[11] Similar to older and daily adolescent smokers, young adolescents and non-daily smokers make regular cessation attempts and should be included in cessation programs along with older adolescents and adolescent daily smokers.[12]

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The Need for Cessation in Schools

Schools are institutions of learning and well-being. Adolescents spend one third of their waking time in school, and 95% of children in the United States attend school.[1] **While many school districts have tobacco-free policies, these policies are incomplete and fall short of the "gold standard" if cessation services are not included.**[2] Despite this, only 17.9% of schools currently offer cessation services to students and 19.4% of schools make referrals for cessation according to the 2014 Missouri School Health Profiles.

Schools are the optimal setting to reach large populations of youth with health-related interventions, including tobacco cessation. Offering services in schools helps eliminate barriers to cessation for youth, such as transportation, cost, and ability to provide follow-up. **In addition, the availability of cessation provides a treatment alternative to the usual disciplinary action for youth who violate school tobacco policies.** School nurses, in particular, are well situated to provide cessation services and have the skills and credibility necessary to do so.[4] Almost all school districts in Missouri have at least one school nurse, and in most cases, one nurse per school. Nurses have a unique opportunity to screen for tobacco use during routine health screenings and office visits. Youth who smoke have more illnesses and more severe illness than youth who do not smoke and therefore might be more likely to visit the school nurse.[5]

Cessation services should be incorporated into coordinated school health programs which seek to integrate health-promoting practices into the school-setting.[6] Missouri school nurses prioritize asthma care and oral health, both of which can be improved by tobacco-free school policies and the provision of cessation services. In fact, during the 2014-2015 school year there were 80,443 Missouri students who had an asthma diagnosis.[7] **In alignment with the Centers for Disease Control and Prevention's *Whole School, Whole Community, Whole Child* model, tobacco cessation is a critical piece of the Health Services component.**[6] School nurses, teachers, counselors and administrators all have a role to play in improving the health of young people and can utilize this toolkit to help adolescents quit tobacco.

Many of the tools provided in the ACES toolkit focus on helping young people quit tobacco through behavioral interventions (e.g., motivational interviewing, completing the quit plan) and would not be considered a medical treatment requiring permission from parents and guardians. By focusing on changing behaviors around tobacco use, school nurses and professionals are able to provide effective and evidence-based assistance to student tobacco users, while respecting the young person's need for confidentiality.

This toolkit was developed from evidence-based literature and best practices for adolescent tobacco cessation. It has been reviewed by experts in tobacco cessation and school nursing and is available to schools at no cost. It is designed to be used one-on-one with adolescents and does not require a group or classroom format. Trainings on adolescent tobacco cessation and the use of this toolkit are available at no cost (see page 45). Schools can and should play a major role in helping young people live full and happy lives, free from nicotine addiction.

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Prevention vs. Cessation

Prevention and cessation are related, yet separate activities. While prevention focuses on preventing non-tobacco users from ever experimenting with or initiating regular tobacco use, cessation involves actively helping a current tobacco user quit. Both are needed in the school setting in order to reduce tobacco use among young people.

Prevention

Prevent non-tobacco users from ever experimenting with or initiating regular tobacco use

Examples:

- Anti-tobacco brochures and PSAs
- Social norms posters (i.e., 88% of students do not use tobacco)
- Peer-to-peer education programs
- Health class presentations on the harms of tobacco
- Red Ribbon Week
- DARE

Cessation

Actively help current tobacco users quit

Examples:

- Setting a quit date
- Talking to someone about quitting
- Making a quit plan
- Cutting back the number of cigarettes smoked each day
- Using nicotine replacement therapy patches or gum
- Using a medication to help stop smoking

Section 2:
Implementation

The 5As Approach

Cessation interventions that take place through the provision of self-help materials, via a telephone Quitline, in a group setting and one-on-one have all been shown to be more effective than making an unassisted quit attempt.[1] **One-on-one cessation coaching is the most effective approach[1], can be implemented on-the-spot and is highly individualized – making it the best approach for working with adolescents in the school setting.**

The 5As are a brief, evidence-based tobacco cessation intervention that takes less than three minutes to complete.[1] **The American Academy of Pediatrics endorses the use of the 5As approach with adolescent tobacco users,[2] and studies have shown it to be effective with young people.[3-4]**

The 5As will help you determine a person's willingness to quit smoking. The first step is to **ask** if a young person uses tobacco. For example, a school nurse could ask all students who visit her office about their tobacco use or she could focus on asking students who present with coughs, respiratory illness, and those who smell of tobacco. If they confirm that they use tobacco, the next step is to **advise** them to quit and **assess** their willingness to make a quit attempt. If a young person is unwilling to quit, the nurse should utilize motivational interviewing techniques to increase the likelihood the young person will make a quit attempt in the future (see page 22). If the young person is willing to quit, the nurse should **assist** him or her in making a quit attempt by helping with setting a quit date and completing a quit plan (see page 23). The final step is to **arrange** for follow-up with that individual to provide support, encouragement and accountability during the quit attempt.

Table 1. The "5As" model for treating tobacco use and dependence[1]

Ask	**Ask every student about tobacco use at every visit. Identify tobacco users and document tobacco use.** Example: 1. "Do you use any tobacco products, even occasionally?"
Advise	**Advise tobacco users to quit. In a clear, strong and personalized manner, urge every tobacco user to quit.** Example: 1. "I think it is important for you to quit now and I can help you. Nicotine is an addictive drug, and the longer you use tobacco the harder it will be to quit."
Assess	**Assess willingness to make a quit attempt.** Example: 1. "On a scale from 0 to 10, how motivated are you to quit?" 2. "Have you ever tried to quit on your own?" 3. "Do you want to quit within the next month?"
Assist	**For persons who want to quit:** Assist the young person in making a quit attempt. Help him/her set a quit date, complete the quit plan (see page 23), identify coping strategies and provide one-on-one support throughout the quit attempt. **For persons who are uninterested in quitting:** Implement motivational interviewing techniques to increase future quit attempts (see page 22).
Arrange	**Arrange follow-up, especially on and following the quit date.** Example: 1. During follow-up visits, success should be congratulated. If the individual has slipped up, review and adapt the quit plan and encourage a new commitment to quitting.

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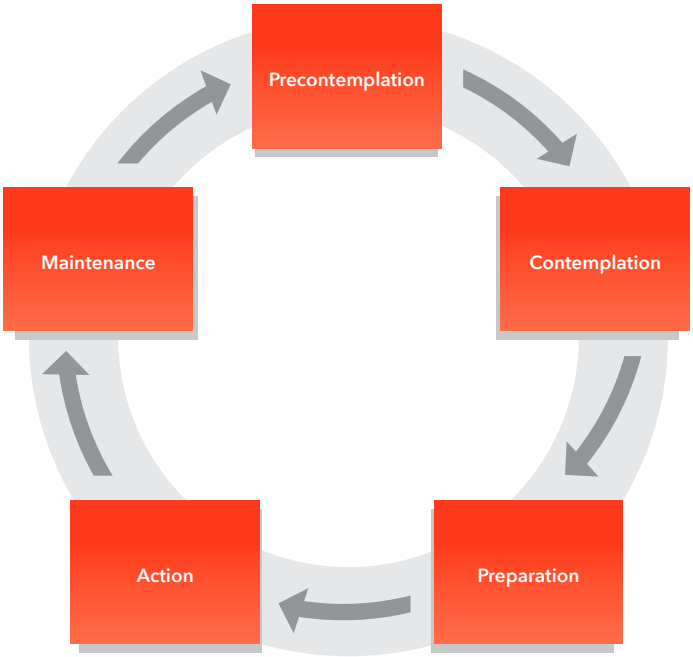
Stages of Change

The Stages of Change (also called the Transtheoretical Model or TTM) help us understand where in the process (i.e., what stage) a person is in terms of making a behavior change, such as quitting tobacco. **There are five Stages of Change and the stages can be thought of as a cycle; people can move backwards or forwards in the cycle at any time.**

It is important to have an idea of which stage a tobacco user is in, in order to best assist him or her in cessation. For example, a student who is in the precontemplation stage will be unaware that his or her tobacco use is a problem and may not have thought about quitting. In this case, motivational interviewing techniques can be used to help the student become aware of the problem and move him/her to the next stage of change (see page 22). If a student expresses interest in quitting in the near future, he or she is in the preparation stage. Offer to help the student set a quit date, fill out the quit plan, identify triggers and coping strategies, provide support and arrange for follow-up (see page 23). A person's stage of change will guide your efforts to help him or her become tobacco free.



Adapted from Prochaska and DiClemente[1]

State of Change	Characteristics	How to Help
Precontemplation	Student is unaware of the problems with their tobacco use. Student is not thinking about quitting any time soon.	Motivational interviewing
Contemplation	Student is weighing the pros and cons of tobacco use and is starting to think about making a change.	Motivational interviewing
Preparation	Student is preparing to make a quit attempt. The student might have chosen a quit date or started looking for people or resources to help with quitting.	Set a quit date, Fill out a quit plan, Identify triggers and coping strategies
Action	The student is actively trying to quit tobacco.	Follow up regularly, Provide support
Maintenance	The student has successfully quit tobacco for a period of time.	Discuss relapse prevention strategies

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Motivational Interviewing

One definition of motivational interviewing (MI) is: a directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence.[1]

A person's motivation to change a behavior, such as quitting tobacco, is always fluctuating. MI helps people explore and resolve their uncertainties about changing a behavior. When thinking about trying to quit tobacco, a young person will experience many moments of doubt. **However, MI can reduce a person's resistance to quitting tobacco by increasing awareness that tobacco use is a problem, strengthening motivation to quit and increasing confidence in one's ability to quit.** MI avoids an aggressive or confrontational approach and instead steers people towards choosing to change their behavior and enhances their self-confidence to do so.[2] Practicing MI with students who are currently uninterested or unwilling to make a quit attempt is critical to increasing the likelihood that they will make a quit attempt in the future. **The goal of MI is to help young people realize that they want to quit and to help them do so.**

MI can be practiced by anyone who works with students. The key characteristics needed to be effective at MI are:

1. Active listening
2. Understanding
3. Demonstrating empathy
4. Knowledgeable
5. Non-Judgmental

MI techniques:

1. Ask open-ended questions
2. Try to understand the student's frame of reference
3. Express acceptance and affirmation
4. Elicit and selectively reinforce the student's own statements related to behavior change
5. Monitor the student's degree of readiness to change
6. Affirm the student's freedom of choice and self-direction

Examples of MI questions that you could ask a young person who is uninterested or unwilling to quit tobacco in an effort to reduce ambivalence about quitting:

1. What warning signs would let you know that this is a problem?
2. Have you tried to quit tobacco in the past?
3. What would have to happen for you to know that this is a problem?
4. What are your reasons for not quitting?
5. What might help you quit?
6. What do you think you need to learn about quitting?
7. What could happen if you don't quit?
8. What would be the good things about quitting?
9. If you were to decide to quit, what would you have to do to make this happen?
10. How can I help you get past some of the difficulties you are experiencing?
11. What is the best thing you can imagine about quitting?
12. If you make changes like quitting, how will your life be different from what it is today?

Learn more about MI:

- **Motivational Interviewing Network of Trainers:** http://www.motivationalinterviewing.org/
- **American Academy of Pediatrics:** https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/HALF-Implementation-Guide/communicating-with-families/pages/Motivational-Interviewing.aspx
- **Nova Southeastern University:** http://www.nova.edu/gsc/forms/mi_rationale_techniques.pdf

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My Personalized Quit Plan – Overview

All cessation interventions should include a behavioral component, such as the completion of an evidence-based quit plan, to achieve optimal success.

An evidence-based quit plan template and a follow-up form for adolescent tobacco cessation interventions were developed for this toolkit. The quit plan template covers reasons for quitting, triggers, coping strategies, support and the rewards of quitting. It should be completed with persons who are in the preparation or action stage of quitting tobacco (see page 21). **You can increase a young person's chances of successfully quitting by helping him or her develop a quit plan using the template on page 27.**

The follow-up form (page 31) covers withdrawal symptoms, triggers experienced, coping strategies used, positive changes experienced and confidence level to remain tobacco-free. It should be completed with young people who are coming back for follow-up throughout a quit attempt.

These tools are unique in several aspects. **These tools were developed from the evidence base (see pages 47-48) and are centered in the most recent research advances in adolescent cessation treatments.** While many of the components of adult cessation interventions can be used with adolescents, there are some unique differences that must be addressed, and all components need to be developmentally appropriate for this age group. These tools are easy to use for both cessation providers (aka "quit coaches") and adolescents and are variable in the amount of time required to complete. An initial cessation intervention meeting, including using the 5As and completing the quit plan template, could take 20 to 60 minutes, depending on the amount of time available to provide the service. While most of the existing cessation curriculums for adolescents require a group or class setting and the purchase of materials, these tools can be used one-on-one and at no cost. **By having the flexibility to provide individual, on-the-spot cessation interventions, cessation providers in the school setting can reach young people more effectively than they would by referring them to outside services or asking them to wait until there is enough interest and participation to justify a group cessation class.**

How to Use My Personalized Quit Plan

The quit plan should be used only with young people who are currently ready and willing to quit tobacco. This quit plan was designed to be completed by an adolescent with the guidance and support of an adult, such as a school nurse or other school professional, who will serve as the "quit coach." **The quit coach should guide the young person through its completion, section-by-section, asking open-ended questions and stimulating conversation along the way.** The quit coach can ask the young person the questions on the quit plan and write down his or her responses, or give the quit plan directly to the young person to fill out. However, the quit coach should be involved in the development of the plan by engaging the young person in conversation about the quit plan and not simply hand it out like a homework assignment. Once completed, the quit coach and young person should both keep a copy of the quit plan. An overview of each section of the quit plan is provided below and an example of a completed quit plan can be found on pages 29-30.

My quit date

It is important for all tobacco users completing the quit plan to set a quit date. **This is the day on which the young person will stop using all tobacco products.** The ideal quit date is approximately two weeks from the time of the completion of the quit plan. This provides enough time for the young person to start to put the quit plan into place, practice his or her coping skills, have his or her support system in place, and cut down on tobacco use. If the young person proposes a quit date longer than two weeks, it may be an indication he or she is still in the precontemplation or contemplation stages of change (see page 21) and motivational interviewing techniques should be employed to reduce the young person's ambivalence about quitting (see page 22).

Follow up appointment

Before the young person leaves, a follow-up appointment should be scheduled. Research finds that the more sessions a person attends with a quit coach, the higher his or her chances are of successfully quitting.[1] The follow-up appointment could be scheduled for as little as a few days from the initial appointment, but should be no longer than two weeks from the initial meeting. **During the follow-up appointment, the follow-up form should be completed, successes should be acknowledged and setbacks should be reviewed.** The quit plan may need to be adapted during the follow-up appointment and additional follow-up appointments can be scheduled.

Reasons to quit

In this section of the quit plan, the young person should make a list of all of the reasons why he or she wants to quit. Examples might be, "it costs too much money" or "I can't smoke at home or at school." Encourage the young person to make a long list. It may help to have the young person identify both short-term goals (e.g., going to college, getting a job) and long-term goals (e.g., being a parent) and imagine the impact that tobacco use would have on achieving those goals.

Triggers

Triggers are people, places, objects, situations or emotions that prompt someone to use tobacco. Triggers are often strongly learned associations. Examples might be:

- **People** – Spending the day with my best friend who smokes, my older brother offering me a cigarette
- **Places** – In my car, at my cousin's house, at the bowling alley
- **Objects** – Lighters, ashtrays, coffee
- **Situations** – While watching TV, at football games, after school
- **Emotions** – Anger, boredom, stress

Start by explaining what triggers are. If the young person has trouble identifying triggers, ask him or her to walk you through a typical day, identifying the times when he or she uses tobacco. After the triggers are identified, complete the "What will I do?" column with a list of healthy coping strategies that are alternatives to tobacco use. Coping strategies often fall into one of the "3 As" or "4 Ds" of tobacco cessation.[124]

Consider the 3 As of tobacco cessation when filling out the "What will I do?" section of the quit plan:

Alternative - Use an alternative product to satisfy the desire to have tobacco products in the hands or mouth.

- Chew candy, gum, mints, sunflower seeds, straws or toothpicks
- Occupy your hands with silly putty, rubber bands or stress balls
- Brush your teeth

Alter - Change the situation or environment that triggers the use of tobacco.

- Pay for your gas at the pump instead of going inside convenience stores
- Ride a bike instead of driving
- Drink tea instead of coffee
- Clean the car so that it doesn't smell like tobacco
- Take breaks by watching funny videos online
- Take deep breaths or go for a jog after an argument
- Spend more time with friends and family members who do not smoke

Avoid – Avoid your triggers.

- Take work breaks inside instead of going out back with the smokers
- Avoid spending a lot of time in places that allow smoking
- Avoid drinking coffee while quitting

Alternatively, some quit coaches encourage users to consider the 4 Ds of quitting tobacco:

Delay – Delaying tobacco can be an effective cessation strategy. By lengthening the amount of time that passes between a craving and tobacco use, resistance to cravings is strenghtend and confidence in your ability to quit is built. Try to increase the length of time between cravings and tobacco use until one is able to completely avoid tobacco use. Cutting down the number of cigarettes smoked or tobacco products used over time can be a successful way to quit.

Deep Breathing – Triggers for tobacco use, such as stress, sadness and anger, can often be managed by deep breathing. Taking several deep breaths can also help alleviate cravings and the symptoms of nicotine withdrawal.

Drink Water – Similar to deep breathing, drinking water can alleviate cravings and the symptoms of nicotine withdrawal.

Distract/Do Something Else – Doing something else allows time for cravings to pass. Staying busy and engaged in hobbies, sports and other activities is an important part of a successful quit attempt.

Things to do instead

This section is used to list hobbies and activities that can be done instead of using tobacco. Examples might include: dancing, playing soccer, practicing piano or reading. It is important to make a list of enjoyable activites that can replace the time that was previously spent using tobacco.

Support

Support from friends, significant others, family and a quit coach, can greatly increase a person's chances of successfully quitting tobacco. It is important to identify specific individuals who will support one's quit attempt at school, at home, at work and in other modes (i.e., via text messages, phone calls and online – see page 38). **A person's support system can provide encouragement and accountability during the quit**

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attempt. In addition, letting people know about a quit attempt can reduce the number of people who use tobacco around the youth, thus reducing temptations and triggers.

Other support strategies

Other support strategies might include the use of online, social media and text messaging programs (see page 38), self-help materials and worksheets or use of a nicotine replacement therapy product (see page 35).

Rewards of quitting

Research finds that young people are motivated to quit tobacco by rewards such as having more money, being more attractive to potential romantic partners and fitting in with their peers. Efforts to promote cessation among young people are most successful when they focus on these types of rewards as well as social norming messages (i.e., 9 out of 10 CPS high school students do not use tobacco; 88% of CPS students prefer to kiss nonsmokers), rather than long-term health consequences such as emphysema and cancer.

ACES

Adolescent Cessation in Every School

My Personalized Quit Plan

Name:

My Quit Date: **Follow-Up Appointment:**

Reasons to quit

Examples: It costs too much, I can't use tobacco in a lot of places

1.

2.

3.

4.

5.

6.

Triggers

Triggers are situations that prompt you to want to smoke.
Examples: After a meal, driving, stress, feeling bored, feeling sad

Trigger 1 **What will I do?**

Trigger 2 **What will I do?**

Trigger 3 **What will I do?**

Trigger 4 **What will I do?**

Trigger 5 **What will I do?**

Trigger 6 **What will I do?**

Things to do instead

Examples: Go for a walk, Call a friend who supports your quitting, Hang out in places you're not allowed to use tobacco

1.

2.

3.

4.

5.

6.

Support

Who can support me at home?

Who can support me at school?

Who can support me at work?

Which friends will help me the most when I'm quitting?

Which friends will be less helpful when I'm quitting?

Other support strategies

Examples: nicotine replacement therapy patches or gum, Call 1-800-Quit-NOW, Get online support at www.becomeanex.org

1.

2.

3.

4.

Rewards of quitting

1.

2.

3.

4.

ACES

Adolescent Cessation in Every School

My Personalized Quit Plan

Name: Alyssa Johnson

My Quit Date: October 15th **Follow-Up Appointment:** October 18th

Reasons to quit

Examples: It costs too much, I can't use tobacco in a lot of places

1. I don't want my little brother to start smoking.
2. I have to hide it from my parents.
3. My hair and clothes smell like smoke.
4. My boyfriend doesn't smoke.
5. We have to start running track in PE class.
6. I don't want to be a smoker when I graduate.

Triggers

Triggers are situations that prompt you to want to smoke.
Examples: After a meal, driving, stress, feeling bored, feeling sad

Trigger 1
Fights with my mom

What will I do?
Take deep breaths, go jogging

Trigger 2
After school

What will I do?
Spend time with my brother

Trigger 3
When I'm with my friends who smoke

What will I do?
Go to places without smoking like the movies, ask them to not offer me cigarettes, spend more time with friends who don't smoke

Trigger 4
Gas station

What will I do?
Pay for my gas at the pump, go to a different station

Trigger 5
Watching TV

What will I do?
Brush my teeth beforehand

Trigger 6
When I'm on the phone

What will I do?
Chew gum, drink water

Things to do instead

Examples: Go for a walk, Call a friend who supports your quitting, Hang out in places you're not allowed to use tobacco

1. Practice piano.
2. Dance classes.
3. Take my brother places.
4. Listen to music.
5. Read a book.
6. Go to the mall.

Support

Who can support me at home? My brother

Who can support me at school? My friends who don't smoke, nurse

Who can support me at work? Jenny

Which friends will help me the most when I'm quitting? Cassie, Joe

Which friends will be less helpful when I'm quitting? Erica, Ron, Dan

Other support strategies

Examples: nicotine replacement therapy patches or gum, Call 1-800-Quit-NOW, Get online support at www.becomeanex.org

1. Chew gum.
2. Download smokefreeTXT.
3. Visit the school nurse once a week.
4.

Rewards of quitting

1. More money for clothes.
2. Not hiding from my parents.
3. Not disappointing my brother.
4. Not having bad breath.

ACES

Adolescent Cessation in Every School

Follow-Up Form

Name: **Next Appointment:**

1. Please circle all withdrawal symptoms you have experienced in the last 7 days.

Desire to smoke (cravings)	Irritability	Restlessness
Dizziness	Headache	Stomach/bowel problems
Anxiety/depression	Difficulty concentrating	Increased eating
Difficulty sleeping	Increased stress	Other: _____
Coughing More		

2. Please circle all the triggers you have experienced in the last 7 days.

When I wake up	After class/school	With coffee or alcohol
After a meal	Talking on the phone	When I'm with certain friends
During social events	Relaxing	When I'm sad
During breaks	Boredom	When I'm angry
In the car	When I'm getting ready for bed	Other: _____

3. Please circle all the coping strategies you have used in the last 7 days.

Drink water	Reduce alcohol/caffeine intake	Go to places that don't allow smoking
Exercise	Call a supportive friend	Chew gum/candy
Deep breathing	Avoid people who are smoking	Use nicotine patches or gum
Avoid triggers	Ride a bike	Work on a hobby
Brush teeth	Take a walk	Play with a pet
Distract myself	Other: _____	

4. Please circle any positive changes experienced since you quit or cut back on tobacco.

Less coughing	Better circulation in hands and feet	Less sinus problems
Easier to breathe	Increased energy	More relaxed, less anxiety
Food tastes better	Sleep improvement	Better concentration
Improved sense of smell	More money	Better grades
Excerise is easier	Whiter teeth	Better relationships
Clearer skin	Fresher breath	Other: _____

5. Since my quit date I have used tobacco:

Not at all 1-2 times 2-5 times 5 or more times Everyday

6. How confident are you that you can stay tobacco free? Please circle your current confidence level.

Not at all confident — Somewhat confident — Very confident

1 2 3 4 5 6 7 8 9 10

Nicotine Withdrawal and Cravings

Nicotine is the main addictive substance found in tobacco products and electronic nicotine delivery systems (see page 3).

Symptoms of nicotine withdrawal vary from person to person. In adolescents, symptoms may include:[1-2]

- Cravings
- Trouble sleeping
- Irritability, frustration or anger
- Restlessness or anxiety
- Trouble concentrating
- Increased hunger
- Feeling sad, down or depressed

Withdrawal symptoms may peak around one week into the quit attempt and will then begin to decrease.[3] **By the second week into a quit attempt, most adolescents experience few withdrawal symptoms.**[3]

Adolescents who use tobacco, those that are making quit attempts and former tobacco users may all experience cravings. Cravings are a symptom of nicotine withdrawal, resulting from physiological nicotine dependence, behavioral habits or a combination of the two. **Cravings may be intense but will normally pass after a few minutes - whether or not the individual uses tobacco.** Knowing that cravings are short (3-10 minutes), often reassures people that they can ride out a craving by utilizing one of the 3 As or 4 Ds (see page 25). Each time a young person is able to resist a craving, he or she is one step closer to being tobacco free.

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Fagerstrom Test for Nicotine Dependence[1]

The Fagerstrom test for nicotine dependence is a helpful tool that can be used with anyone making a quit attempt. This tool provides a measure of physiological nicotine dependence. It does not address psychological dependence (e.g., learned behaviors, associations and habits). It may be helpful to complete the Fagerstrom test before or during quit plan development.

Those with higher levels of physiological nicotine dependence may experience more withdrawal symptoms, may need more intensive coaching and may benefit from gradually tapering tobacco use.

1. How soon after you wake up do you smoke your first cigarette?

- Within 5 minutes (3 points)
- 5 to 30 minutes (2 points)
- 31 to 60 minutes (1 point)
- After 60 minutes (0 points)

2. Do you find it difficult not to smoke in places where you shouldn't, such as in church or school, in a movie, at the library, on a bus, in a court or in a hospital?

- Yes (1 point)
- No (0 points)

3. Which cigarette would you most hate to give up; which cigarette do you treasure the most?

- The first one in the morning (1 point)
- Any other one (0 points)

4. How many cigarettes do you smoke each day?

- 10 or fewer (0 points)
- 11 to 20 (1 point)
- 21 to 30 (2 points)
- 31 or more (3 points)

5. Do you smoke more during the first few hours after waking up than during the rest of the day?

- Yes (1 point)
- No (0 points)

6. Do you still smoke if you are so sick that you are in bed most of the day, or if you have a cold or the flu and have trouble breathing?

- Yes (1 point)
- No (0 points)

Scoring:
7 to 10 points = highly dependent
4 to 6 points = moderately dependent
Less than 4 points = minimally dependent

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Section 3:
Resources

Nicotine Replacement Therapy and Cessation Medications: Overview

Nicotine replacement therapy products and cessation medications, when paired with a behavioral intervention such as a quit plan, increase a person's chances of successfully quitting tobacco. In addition, research finds these products to be effective and safe for use by adolescents, with no more risk of side effects than seen in adults.

Nicotine replacement therapy (NRT)

Similar to adults, adolescent smokers experience withdrawal symptoms that can be reduced by pharmacological interventions.[1] Behavioral strategies combined with nicotine replacement therapy will increase the number of successful smoking cessation attempts among youth.[1] The most common forms of NRT (patches, gum and lozenges) are available over-the-counter at pharmacies, drug stores and retail outlets. Other forms of NRT and cessation medications (nasal spray, inhaler, varenicline and bupropion SR) require a prescription. These products may be available to some individuals at no cost depending on his or her insurance or Medicaid. Types of pharmacological therapies and appropriate dosing are discussed below.

Evidence and recommendations for Using NRT with adolescent tobacco users:

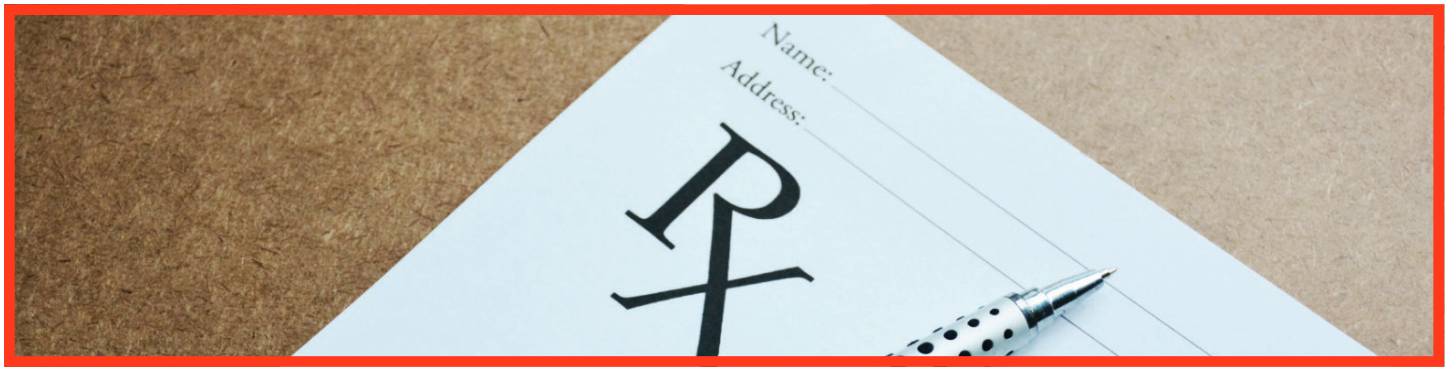
- Adolescents not interested in quitting smoking can still reduce tobacco use through cigarette reduction and NRT use.[2] In a study conducted at the University of Minnesota, adolescents were told to reduce their smoking by 25% during the first week of the program and by 50% during the subsequent three weeks. At the end of treatments, 49% of adolescents had reduced smoking by at least 50%. The results suggest that cigarette reduction along with NRT may be a potential aid to engage adolescents who are unable or unwilling to quit, but should not be an end goal.
- NRT use significantly increases self-reported and biochemically verified smoking abstinence rates in adolescents.[3-7]
- Approximately 5% of adolescents reported trying or currently using nicotine gum or patches, and almost 40% of former adolescent smokers reported using NRT to try to quit smoking.[8] **More than 50% of adolescents reported that it would be easy for them to get NRT.**
- Participation in cessation counseling was significantly associated with increased NRT use by adolescent tobacco users, whereas attending anti-smoking classes in school was inversely associated with using NRT.[9] School-based antismoking classes should discourage tobacco use without discouraging the use of nicotine products that are FDA approved to help users quit (e.g., nicotine patches, gum and lozenges).
- In a study of the safety and efficacy of NRT use among adolescent tobacco users, compliance was higher for the use of NRT patches than for NRT gum.[4] Both NRT products were well tolerated, and side effects were similar to those reported in adults. No serious adverse events were reported.[5-6]
- NRT use along with behavioral therapy is effective in helping adolescent smokeless tobacco users quit.[10]
- NRT use and counseling not only improve smoking abstinence rates in adolescents, they also reduce nicotine dependence and withdrawal symptoms.[7]

Cessation medications

Prescription medications are also available to help tobacco users quit. Some can be used along with nicotine replacement therapy (NRT), and some must be started before a person's planned quit day. A prescription is needed for these medications. Types of pharmacological therapies and appropriate dosing are discussed below.

Recommendations:

- Adolescents do not experience any more side effects from cessation medications than reported in adults.[11-12]
- Adolescents can receive lower doses of cessation medications according to their body weight.[12]
- A study of varenicline and bupropion XL use in adolescent smokers reported no serious adverse events.[13]
- If pharmacotherapy is used to treat adolescent tobacco users, it should be individualized (based on smoking patterns, patient preferences and comorbidities) and combined with psychosocial and behavioral interventions.[14]
- Combination nicotine patch, bupropion SR and counseling sessions achieved a 28% abstinence rate for adolescent smokers 26 weeks from baseline.[15] Combinations of NRT, cessation medication and counseling are effective at achieving long term cessation.[15]



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12. Faessel, H., Ravva, P., and Williams, K. (2009). Pharmacokinetics, safety, and tolerability of varenicline in healthy adolescent smokers: A multicenter, randomized, double-blind, placebo-controlled, parallel-group study. Clinical Therapeutics, 31(1): 177-189.

13. Gray, K. M., Carpenter, M. J., Baker, N. L., Hartwell, K. J., Lewis, A. L., Hiott, D. W., ... and Upadhyaya, H. P. (2011). Bupropion SR and contingency management for adolescent smoking cessation. Journal of Substance Abuse Treatment, 40(1): 77-86.

14. Karpinski, J. P., Timpe, E. M., and Lubsch, L. (2010). Smoking cessation treatment for adolescents. The Journal of Pediatric Pharmacology and Therapeutics, 15(4): 249-263.

15. Killen, J. D., Robinson, T. N., Ammerman, S., Hayward, C., Rogers, J., Stone, C., ... and Schatzberg, A. F. (2004). Randomized clinical trial of the efficacy of bupropion combined with nicotine patch in the treatment of adolescent smokers. Journal of Consulting and Clinical Psychology, 72(4), 729.

Nicotine Replacement Therapy and Cessation Medications: Dosing

Nicotine replacement therapy (NRT) and cessation medication dosing will likely be similar for adolescents and adults. The type of NRT or medication used and dosing should be determined by health care professionals and based on the adolescent's body size, nicotine dependence level and medical history.

FDA approved NRT and medication include:

	Availability*	Dosage	Duration	Education
Nicotine Patches	OTC	21 mg/day for > 10 cigs/day 14 mg/day or 7 mg/day for ≤ 10 cigs/day OR if <100 lbs	Up to 12 weeks Taper after 4-6 weeks	Apply each day to dry, hairless skin Rotate site daily Remove before bedtime if needed to avoid insomnia
Nicotine Gum	OTC	2 mg for < 25 cigs/day 4 mg for ≥ 25 cigs/day Max 1 piece/hour Use as needed	Up to 12 weeks Taper after 4-6 weeks	Do not chew like ordinary gum Alternate chewing and "parking" between the cheek and gum to allow nicotine to absorb through the lining of the mouth (about 30 minutes) Avoid food and acidic drinks (soda and coffee) before and during use
Nicotine Lozenges	OTC	2 mg if smoke 1st cig more than 30 minutes after waking 4 mg if smoke 1st cig within 30 minutes of waking Do not use more than 20 lozenges/day Use as needed	Up to 12 weeks Taper after 4-6 weeks	Do not bite, chew or swallow Allow to absorb in mouth slowly (20-30 minutes) Avoid food and acidic drinks (soda and coffee) before and during use
Nicotine Nasal Spray	RX	Max 40 doses/day 1 dose = 1 spray per nostril	Up to 6 months Taper after 12 weeks	Check with physician
Nicotine Inhaler	RX	6-16 cartridges/day Use 1 cartridge/hour Use as needed	Up to 6 months Taper after 4-6 weeks	Check with physician
Varenicline (Chantix)	RX	Start 1 week before quit date Use as prescribed	As prescribed	Check with physician
Bupropion SR (Zyban or Wellbutrin)	RX	Start 1-2 weeks before quit date Use as prescribed	As prescribed	Can be used with NRT

*OTC = Over the counter; RX = prescription

For additional information on NRT, cessation medications and dosing:

- **American Cancer Society**
  http://www.cancer.org/healthy/stayawayfromtobacco/guidetoquittingsmoking/guide-to-quitting-smoking-types-of-nrt
- **American Academy of Family Physicians**
  http://www.aafp.org/afp/2001/0601/p2251.html
- **Mayo Clinic**
  http://www.mayo.edu/research/documents/medication-handout-2015-02-pdf/doc-20140182
- **Food and Drug Administration (FDA)**
  http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm198176.htm

Self-Help Materials

In-between visits with the quit coach, adolescents should practice the coping strategies identified in their quit plans and take advantage of the numerous self-help materials available to them. **Depending on the interests and needs of the young person you are helping, work together to choose a few of these self-help resources for the young person to use in-between your appointments.**

*Highly youth friendly resource

Online

- *SfT (Smokefree Teen): http://teen.smokefree.gov/
- Quit Now: https://www.quitnow.net/Program/
- Smokefree.gov: http://smokefree.gov/
- Smokefree Women: http://women.smokefree.gov/
- BeTobaccoFree.gov: http://betobaccofree.hhs.gov/quit-now/index.html
- Quit Tobacco – Make Everyone Proud (for military families): https://www.ucanquit2.org/
- American Lung Association: http://www.lung.org/stop-smoking/
- American Heart Association: http://www.heart.org/HEARTORG/GettingHealthy/QuitSmoking/Quit-Smoking_UCM_001085_SubHomePage.jsp
- American Cancer Society: http://www.cancer.org/healthy/stayawayfromtobacco/guidetoquittingsmoking
- Become an Ex: http://www.becomeanex.org/
- *truth: http://www.thetruth.com/
- truth initiative: http://truthinitiative.org/
- *The Real Cost: http://therealcost.betobaccofree.hhs.gov/

Text message

- *SmokefreeTXT: http://teen.smokefree.gov/smokefreeTXT.aspx

Instant messaging

- National Cancer Institute: https://livehelp.cancer.gov/app/chat/chat_launch
- American Lung Association: http://www.lung.org/

Phone

- State Quitline: 1-800-QUITNOW
- National Cancer Institute: 1-877-44U-QUIT
- American Lung Association: 1-800-LUNGUSA
- American Cancer Society: 1-800-ACS-2345

Mobile apps

- *QuitSTART: http://teen.smokefree.gov/sftapps.aspx

Videos

- Tips from Former Smokers: http://www.cdc.gov/tobacco/campaign/tips/
- *truth: https://www.youtube.com/user/truthorange
- *The Real Cost: https://www.youtube.com/user/KnowTheRealCost

Worksheets and quizzes

- *Smokefree Teen: http://teen.smokefree.gov/quizzes.aspx
- Cost Savings Calculator: https://www.quitnow.net/missouri/About/Calculator/CostSavings.aspx

In-person

- Contact the local health department (cessation services are often available at reduced or no cost)
- Talk to a healthcare provider (cessation services fully covered by Medicaid, Medicare and many private insurers)

Cessation for Adults

The cessation services presented in this toolkit will also work for adults. Cessation providers can and should extend these services to school faculty, staff and parents. Helping school faculty and staff quit will reduce violations of school tobacco-free policies and create role models for adolescent tobacco users who are thinking of quitting. In addition, parents and adolescents may benefit from quitting tobacco together. Engaging parents in cessation will reduce youth exposure to secondhand smoke and easy access to tobacco products in the home.

To promote these services to faculty and staff:

- Hang flyers in lounge and office areas promoting the services
- Announce the services at faculty and staff meetings
- Ask administration to send out an email promoting the services
- Have cessation services listed on tobacco-free signs around the campus

To promote these services to parents:

- Hang flyers in the nurse's office
- Hand out information to all parents who visit the nurse's office
- Bring up tobacco cessation when discussing a child's health issues such as coughing, asthma and respiratory illness
- Let parents know that children are harmed by exposure to secondhand smoke and that anyone who smokes in the home can get help quitting

Additional Cessation Resources for Adults include:

Online

- Quit Now: https://www.quitnow.net/Program/
- Smokefree.gov: http://smokefree.gov/
- Smokefree Women: http://women.smokefree.gov/
- BeTobaccoFree.gov: http://betobaccofree.hhs.gov/quit-now/index.html
- Quit Tobacco – Make Everyone Proud (for military families): https://www.ucanquit2.org/
- American Lung Association: http://www.lung.org/stop-smoking/
- American Heart Association: http://www.heart.org/HEARTORG/GettingHealthy/QuitSmoking/Quit-Smoking_UCM_001085_SubHomePage.jsp
- American Cancer Society: http://www.cancer.org/healthy/stayawayfromtobacco/guidetoquittingsmoking
- Become an Ex: http://www.becomeanex.org/

Instant messaging

- National Cancer Institute: https://livehelp.cancer.gov/app/chat/chat_launch
- American Lung Association: http://www.lung.org/

Phone

- State Quitline: 1-800-QUITNOW
- National Cancer Institute: 1-877-44U-QUIT
- American Lung Association: 1-800-LUNGUSA
- American Cancer Society: 1-800-ACS-2345

Videos

- Tips from Former Smokers: http://www.cdc.gov/tobacco/campaign/tips/

Worksheets and quizzes

- Cost Savings Calculator: https://www.quitnow.net/missouri/About/Calculator/CostSavings.aspx

In-person

- Contact the local health department (cessation services are often available at reduced or no cost)
- Talk to a healthcare provider (cessation services fully covered by Medicaid, Medicare and many private insurers)

Resources for Tobacco Prevention

Along with cessation services, prevention resources should be utilized in a comprehensive effort to decrease adolescent tobacco use. School-based tobacco prevention programs are effective at reducing tobacco use initiation among youth.[1]

According to the CDC, successful school-based tobacco prevention efforts should include[2]:

- Education about the short-term and long-term negative physical, cosmetic and social consequences of tobacco use
- Practices that change the social norms related to smoking, decrease social acceptability and help youth understand that most of their peers do not smoke
- Information about the reasons teens begin to smoke, such as a desire for maturity and acceptance, with guidance toward more positive means to achieve these goals
- Exposure of the tobacco industry's manipulative marketing practices and targeting of youth and development of the skills to counter these messages
- Refusal skills training (i.e., refusal to try tobacco, saying "no")

Many evidence-based national and local tobacco prevention resources are available for the school-based setting.

Local resources

- **Tobacco Free Missouri Youth (TFMYouth):**
  https://www.facebook.com/TobaccoFreeMissouriYouthAdvisoryBoard
- **Missouri Department of Health and Human Services:**
  http://health.mo.gov/living/wellness/tobacco/smokingandtobacco/tobaccocontrol.php
- **Wyman's Teen Outreach Program:**
  http://wymancenter.org/midwest/
- **ACT Missouri:**
  https://www.actmissouri.org/
- **National Council on Alcoholism and Drug Abuse-St. Louis Area (NCADA):**
  http://ncada-stl.org/prevention-programs/school-based-programs/k-12-programs/

National resources

- **Campaign for Tobacco Free Kids:**
  http://www.tobaccofreekids.org/
- **truth initiative:**
  http://truthinitiative.org/
- **SfT (Smokefree Teen):**
  http://teen.smokefree.gov/
- **The Real Cost:**
  http://therealcost.betobaccofree.hhs.gov/
- **CDC's Effective Tobacco Countermarketing Campaign:**
  http://www.cdc.gov/tobacco/stateandcommunity/counter_marketing/manual/index.htm
- **Surgeon General's - Report Preventing Tobacco Use Among Youth and Young Adults:**
  http://www.cdc.gov/tobacco/data_statistics/sgr/2012/index.htm
- **The Social Norms Approach:**
  http://www.alanberkowitz.com/articles/social%20norms%20approach-short.pdf

A note on tobacco industry youth prevention programs

Tobacco companies have created their own youth "prevention" programs; however, research finds that these programs are ineffective and therefore should not be used. The 2012 Surgeon General's Report, *Preventing Tobacco Use Among Youth and Young Adults*, states, "The tobacco companies' activities and programs for the prevention of youth smoking have not demonstrated an impact on the initiation or prevalence of smoking among young people."[3] Read more at:

- Campaign for Tobacco Free Kids. (2015). Big surprise: Tobacco company prevention campaigns don't work; Maybe it's because they are not supposed to. Retrieved from: https://www.tobaccofreekids.org/research/factsheets/pdf/0302.pdf

References

1. Campaign for Tobacco Free Kids. (2015). School-based programs reduce tobacco use. Retrieved from: <http://www.tobaccofreekids.org/research/factsheets/pdf/0050.pdf>.

2. Centers for Disease Control and Prevention. (1994). Guidelines for school health programs to prevent tobacco use and addiction. Morbidity and Mortality Weekly Report: 43(RR-2).

3. U.S. Department of Health and Human Services. (2012). Preventing tobacco use among youth and young adults: A report of the Surgeon General. Retrieved from: <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>.

School District Tobacco-Free Policies

How to find your school district tobacco-free policy

For school districts using the Missouri Consultants for Education (www.moconed.com) policies, check Policy 2640 (related to smoking). Most of these policies are expanded in Regulations 2610, which defines the penalties that are involved when students commit tobacco policy infractions. For school districts using the Missouri School Board (www.msbanet.org) policies, check Section A (covers tobacco-free campus policies) and Section I (covers tobacco discipline issues).

The gold standard

To reinforce tobacco prevention messages and cessation services, schools should implement and enforce strong, comprehensive tobacco-free policies. A comprehensive school tobacco-free policy must be consistent with state and local laws and should include the following elements[1-2]:

- An explanation of the rationale for preventing tobacco use
- Prohibition of tobacco use by students, faculty, staff, contractors, parents and visitors
- Prohibition of tobacco use on school property (owned, leased or rented), in school vehicles (owned, leased or rented) and at school-sponsored functions away from school property
- Prohibition of all tobacco and electronic nicotine delivery system products – including, but not limited to: cigarettes, cigars, pipes, smokeless tobacco and e-cigarettes
- Provisions for enforcing the policy 24 hours a day, 365 days a year
- Designation of a person responsible for policy enforcement
- Procedures for communicating the policy to students, faculty, staff, contractors, parents and visitors
- Provisions for the consequences of violating the policy for students, faculty, staff, contractors, parents and visitors
- Provisions for students, faculty and staff to have access to tobacco cessation services
- **Designates cessation** and education for offenses by students and staff, not just punitive measures
- A requirement that all students receive tobacco prevention and education messages

How to strengthen your policy

Between now and the year 2020 the Comprehensive Tobacco Control Program in the Missouri Department of Health and Senior Services will be working with local health departments and school districts to assure that districts have tobacco-free policies that are comprehensive. For more information, contact:

Comprehensive Tobacco Control Program
motobaccoprogram@health.mo.gov
Missouri Department of Health and Senior Services
(573) 522-2824

State School Nurse Consultant
shs@health.mo.gov
Missouri Department of Health and Senior Services
(573) 522-2622

References
1. Centers for Disease Control and Prevention. (1994). Guidelines for school health programs to prevent tobacco use and addiction. Morbidity and Mortality Weekly Report, 43(RR-2): 1-18.

2. Barbero, C., Moreland-Russell, S., Bach, L. E., and Cyr, J. (2013). An evaluation of public school district tobacco policies in St. Louis County, Missouri. Journal of School Health, 83(8), 525-532.

3. Nebraska Department of Health and Human Services. (n.d.). Tobacco free school kit. Retrieved from: <http://dhhs.ne.gov/publichealth/Documents/TFSchoolToolkit.pdf>.

Who Can Help?

There are professionals in Missouri who can assist you in using this toolkit and providing tobacco cessation services.

Jenna Wintemberg, MPH, CHES
For more information and to request a training: cessationineveryschool@gmail.com
University of Missouri
ACES, Creator and Trainer, Nationally Certified Tobacco Treatment Specailist

Marjorie Cole, MSN, RN
marjorie.cole@health.mo.gov
State School Nurse Consultant
Missouri Department of Health and Senior Services
(573) 522-2622

Kevin Everett, PhD
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Associate Professor
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(573) 882-2190

Comprehensive Tobacco Control
motobaccoprogram@health.mo.gov
Missouri Department of Health and Senior Services
(573) 522-2824

Diane Coffman, EdS, MEd
diane.coffman@health.mo.gov
Cessation Coordinator, Comprehensive Tobacco Control
Missouri Department of Health and Senior Services
(573) 441-6231

Books and Guides:

- Jaen, C. R., Baker, T. B., Bailey, W. C., Benowitz, N. L., Curry, S. E. E. A., Dorfman, S. F., ... and Wewers, M. E. (2008). Treating tobacco use and dependence: 2008 update. http://www.ncbi.nlm.nih.gov/books/NBK63952/.
- Abrams, D. B., and Niaura, R. (Eds.). (2003). The tobacco dependence treatment handbook: A guide to best practices. Guilford Press.

Section 4:
Appendices

Appendix 1: Quit Plan Template with References

My Personalized Quit Plan

Name:

My Quit Date: **Follow-Up Appointment:**

Patten CA, Decker PA, Dornelas EA, et al. Changes in readiness to quit and self-efficacy among adolescents re- ceiving a brief office intervention for smoking cessation. Psychol Health Med. 2008;13(3):326-336.

Sussman S, Sun P, Dent CW. A meta- analysis of teen cigarette smoking cessation. Health Psychol. 2006;25 (5):549-557.

Reasons to quit

Examples: It costs too much, I can't use tobacco in a lot of places

1.
2.
3.
4.
5.
6.

van Zundert RM, van de Ven MO, Engels RC, Otten R, van den Eijnden RJ. The role of smoking-cessation-specific parenting in adolescent smoking-specific cognitions and readiness to quit. J Child Psychol Psychiatry. 2007;48(2):202-209.

Sussman S, Lichtman K, Ritt A, Pallonen UE. Effects of thirty-four adolescent tobacco use cessation and prevention trials on regular users of tobacco products. Subst Use Misuse. 1999;34(11):1469- 1503.

Triggers

Triggers are situations that prompt you to want to smoke.
Examples: After a meal, driving, stress, feeling bored, feeling sad

Trigger 1

Donovan KA. Smoking cessation programs for adoles- cents. J Sch Nurs. 2000;16(4):36-43.

Krishnan-Sarin S, Duhig AM, McKee SA, et al. Contingency management for smoking cessation in adolescent smok- ers. Exp Clin Psychopharmacol. 2006;14(3):306-310.

Trigger 2

Asfar T, Klesges RC, Sanford SD, et al. Trial design: The St. Jude Children's Research Hospital Cancer Survivors Tobac- co Quit Line study. Contemp Clin Trials. 2010;31(1):82-91.

Trigger 3

Colby SM, Nargiso J, Tevyaw TO, et al. Enhanced motiva- tional interviewing versus brief advice for adolescent smoking cessation: results from a randomized clinical trial. Addict Behav. 2012;37(7):817-823.

Hwang MS, Yeagley KL, Petosa R. A meta-analysis of ado- lescent psychosocial smoking prevention programs pub- lished between 1978 and 1997 in the United States. Health Educ Behav. 2004;31(6):702-719.

Trigger 4

Sussman S, Sun P, Dent CW. A meta-analysis of teen ciga- rette smoking cessation. Health Psychol. 2006;25(5):549- 557.

Curry SJ, Mermelstein RJ, Sporer AK. Therapy for specific problems: youth tobacco cessation. Annu Rev Psychol. 2009;60:229-255.

Trigger 5

McDonald P, Colwell B, Backinger CL, Husten C, Maule CO. Better practices for youth tobacco cessation: evidence of review panel. Am J Health Behav. 2003;27(Suppl 2):S144- S158.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self- initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Trigger 6

Sussman S, Lichtman K, Ritt A, Pallonen UE. Effects of thirty-four adolescent tobacco use cessation and preven- tion trials on regular users of tobacco products. Subst Use Misuse. 1999;34(11):1469-1503.

Things to do instead

Examples: Go for a walk, Call a friend who supports your quitting, Hang out in places you're not allowed to use tobacco

1.

2.

3.

4.

5.

6.

Support

Who can support me at home?

Who can support me at school?

Who can support me at work?

Which friends will help me the most when I'm quitting?

Which friends will be less helpful when I'm quitting?

Other support strategies

Examples: Nicotine Replacement Therapy patches or gum, Call 1-800-Quit-NOW, Get online support at www.becomeanex.org

1.

2.

3.

4.

Chen HH, Yeh ML. Developing and evaluating a smoking cessation pro- gram combined with an Internet-assisted instruction program for ado- lescents with smoking. Patient Educ Couns. 2006;61(3):411-418.

Mermelstein R, Turner L. Web-based support as an adjunct to group- based smoking cessation for adolescents. Nicotine Tob Res. 2006;8 (Suppl 1):S69-S76.

Peterson AV, Jr., Kealey KA, Mann SL, et al. Group-randomized trial of a proactive, personalized telephone counseling intervention for adoles- cent smoking cessation. J Natl Cancer Inst. 2009;101(20):1378-1392.

Hurt RD, Croghan GA, Beede SD, Wolter TD, Croghan IT, Patten CA. Nico- tine patch therapy in 101 adolescent smokers: efficacy, withdrawal symptom relief, and carbon monoxide and plasma cotinine levels. Arch Pediatr Adolesc Med. 2000;154(1):31-

Moolchan ET, Robinson ML, Ernst M, et al. Safety and efficacy of the nicotine patch and gum for the treatment of adolescent tobacco addic- tion. Pediatrics. 2005;115(4):e407-e414.

Scherphof CS, van den Eijnden RJ, Engels RC, Vollebergh WA. Short-term efficacy of nicotine replacement therapy for smoking cessation in ado- lescents: a randomized controlled trial. J Subst Abuse Treat. 2014;46 (2):120-127.

Smith TA, House RF, Jr., Croghan IT, et al. Nicotine patch therapy in adolescent smokers. Pediatrics. 1996;98(4 Pt 1):659-667.

Swanson AN, Shoptaw S, Heinzerling KG, et al. Up in smoke? A prelimi- nary open-label trial of nicotine replacement therapy and cognitive behavioral motivational enhancement for smoking cessation among youth in Los Angeles. Subst Use Misuse. 2013;48(14):1553-1562.

Rewards of quitting

1.

2.

3.

4.

Cavallo DA, Cooney JL, Duhig AM, et al. Combining cognitive behavioral therapy with contingency management for smoking cessation in adolescent smokers: a preliminary comparison of two different CBT formats. Am J Addict. 2007;16(6):468-474.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Appendix 2: Follow Up Form with References

Name: **Next Appointment:**

1. Please circle all withdrawal symptoms you have experienced in the last 7 days.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Klein JD, Camenga DR. Tobacco prevention and cessation in pediatric patients. Pediatr Rev. 2004;25(1):17-26.

Maharaj K, Ternullo S. Using nicotine replacement therapy in treating nicotine addiction in adolescents. J Sch Nurs. 2001;17(5):278-282.

Smith TA, House RF, Jr., Croghan IT, et al. Nicotine patch therapy in adolescent smokers. Pediatrics. 1996;98(4 Pt 1):659-667.

2. Please circle all the triggers you have experienced in the last 7 days.

3. Please circle all the coping strategies you have used in the last 7 days.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Donovan KA. Smoking cessation programs for adolescents. J Sch Nurs. 2000;16(4):36-43.

Hwang MS, Yeagley KL, Petosa R. A meta-analysis of adolescent psychosocial smoking prevention programs published between 1978 and 1997 in the United States. Health Educ Behav. 2004;31(6):702-719.

Bailey SR, Hagen SA, Jeffery CJ, et al. A randomized clinical trial of the efficacy of extended smoking cessation treatment for adolescent smokers. Nicotine Tob Res. 2013;15(10):1655-1662.

Krishnan-Sarin S, Duhig AM, McKee SA, et al. Contingency management for smoking cessation in adolescent smokers. Exp Clin Psychopharmacol. 2006;14(3):306-310.

Asfar T, Klesges RC, Sanford SD, et al. Trial design: The St. Jude Children's Research Hospital Cancer Survivors Tobacco Quit Line study. Contemp Clin Trials. 2010;31(1):82-91.

Colby SM, Nargiso J, Tevyaw TO, et al. Enhanced motivational interviewing versus brief advice for adolescent smoking cessation: results from a randomized clinical trial. Addict Behav. 2012;37(7):817-823.

Curry SJ, Mermelstein RJ, Sporer AK. Therapy for specific problems: youth tobacco cessation. Annu Rev Psychol. 2009;60:229-255.

McDonald P, Colwell B, Backinger CL, Husten C, Maule CO. Better practices for youth tobacco cessation: evidence of review panel. Am J Health Behav. 2003;27(Suppl 2):S144-S158.

Sussman S, Lichtman K, Ritt A, Pallonen UE. Effects of thirty-four adolescent tobacco use cessation and prevention trials on regular users of tobacco products. Subst Use Misuse. 1999;34(11):1469-1503.

Moolchan ET, Robinson ML, Ernst M, et al. Safety and efficacy of the nicotine patch and gum for the treatment of adolescent tobacco addiction. Pediatrics. 2005;115(4):e407-e414.

Scherphof CS, van den Eijnden RJ, Engels RC, Vollebergh WA. Short-term efficacy of nicotine replacement therapy for smoking cessation in adolescents: a randomized controlled trial. J Subst Abuse Treat. 2014;46(2):120-127.

Smith TA, House RF, Jr., Croghan IT, et al. Nicotine patch therapy in adolescent smokers. Pediatrics. 1996;98(4 Pt 1):659-667.

Swanson AN, Shoptaw S, Heinzerling KG, et al. Up in smoke? A preliminary open-label trial of nicotine replacement therapy and cognitive behavioral motivational enhancement for smoking cessation among youth in Los Angeles. Subst Use Misuse. 2013;48(14):1553-1562.

4. Please circle any positive changes experienced since you quit or cut back on tobacco.

Sussman S. Effects of sixty six adolescent tobacco use cessation trials and seventeen prospective studies of self-initiated quitting. Tob Induc Dis. 2002;1(1):35-81.

Krishnan-Sarin S, Duhig AM, McKee SA, et al. Contingency management for smoking cessation in adolescent smokers. Exp Clin Psychopharmacol. 2006;14(3):306-310.

van Zundert RM, van de Ven MO, Engels RC, Otten R, van den Eijnden RJ. The role of smoking-cessation-specific parenting in adolescent smoking-specific cognitions and readiness to quit. J Child Psychol Psychiatry. 2007;48(2):202-209.

Cavallo DA, Cooney JL, Duhig AM, et al. Combining cognitive behavioral therapy with contingency management for smoking cessation in adolescent smokers: a preliminary comparison of two different CBT formats. Am J Addict. 2007;16(6):468-474.

5. Since my quit date I have used tobacco:

Not at all 1-2 times 2-5 times 5 or more times Everyday

6. How confident are you that you can stay tobacco free? Please circle your current confidence level.

Not at all confident Somewhat confident Very confident

1 2 3 4 5 6 7 8 9 10

Adolescent Cessation in Every School

www.cessationineveryschool.com

The Need for Adolescent Tobacco Cessation Tools and Training Among Missouri School Nurses

Jenna Wintemberg, MPH, CHES & Kevin Everett, PhD
University of Missouri

Introduction

- Every year 6,100 Missouri kids under the age of 18 become new daily smokers and the Missouri high school smoking rate is 11%, which is much higher than the national average at 7%. Smokeless tobacco use and e-cigarette use is also high in Missouri. In addition, schools report tobacco use as a daily problem.
- Efforts must be made at the community and institutional levels, within schools for example, to reduce tobacco use. However, from 2008 to 2014 the percentage of secondary schools in which the lead health educator received professional development on tobacco use decreased from 34.6% to 18.2%, despite the fact that 54.0% report wanting training in this area.
- School nurses may be well situated to encourage or provide adolescent tobacco cessation. Almost all school districts in Missouri have at least one school nurse, and in most cases, one nurse per school. In 2014, 75.2% of Missouri schools had a full-time nurse who provides health services to students. Research finds that students view school nurses as non-authoritarian, non-judgmental and credible, and school nurse delivered cessation interventions can be effective.
- A pilot study of Missouri school nurses was conducted to determine: 1) the strength of the district's existing tobacco policy; 2) if and how school nurses are involved in helping students quit tobacco and; 3) if school nurses have a need for evidence-based tools and trainings to help students quit.

Figure 1. Areas of Missouri Represented in Key Informant Interviews with School Nurses & Coordinators (N=12)

METHODS

Key Informant Interviews

The Missouri State School Nurse Consultant provided the researcher with contact information for a geographically diverse group of high school nurses and coordinators (Figure 1). Key informant interview were conducted with school nurses (N=8), school nurse coordinators (N=4) and Department of Health and Senior Services staff (N=2). Interview questions included, "Is tobacco use a problem?" "If at all, how do you currently help student tobacco users quit?" and "What barriers do school nurses face in helping students quit smoking?"

Lead Nurse Survey

With the support of the School Nurse Consultant, a survey was sent out to the Lead school nurse at each of the state's 522 districts asking them to identify specific elements of their district's tobacco policy, problems with policy enforcement and any cessation services offered.

Missouri Association of School Nurses Focus Group

A semi-structured focus group was held during the annual Missouri Association of School Nurses (MASN) conference with school nurses (N=9) who serve on the organization's board of directors in order to collect in-depth information on student tobacco use, barriers to providing cessation, and the need for adolescent cessation training and tools. Focus group questions included, "What training do school nurses receive on providing tobacco cessation?" and "Do school nurses need evidence-based tools to assist with adolescent tobacco cessation?" The focus group was audiotaped, transcribed and data were analyzed using qualitative approaches to identify major themes.

Table 1. Key Informant Interview Themes (N=14)

Concerns about tobacco
Concerns about students' exposure to secondhand smoke
Observe students, parents, and faculty smoking across the street and on campus
Students have tobacco products confiscated while in school and are disciplined
Experience with providing tobacco cessation
No training
Nurses take one pharmacology class during college
Current methods for providing cessation
Discuss health consequences of smoking
Refer to health department
Look online for resources
Barriers to providing cessation
Issues of confidentiality
Follow up is difficult
Need for evidence-based cessation tools
Yes, there is a need
Format of cessation tools
Simple and concise
Includes videos
Backed up with data
Paper and electronic copies available
Need for evidence-based cessation trainings
Yes, there is a need
Format of cessation trainings
No trainings at the beginning of the school year, over lunch time, or over the summer
Online and in-person
Present at MASN, Coordinated School Health, Lead Nurses training, and new nurses' training
Other themes
Tobacco free school campus policies help cessation efforts
"Students have to be healthy in order to learn"

Figure 2. Missouri School District Tobacco Policy Components (N=266)

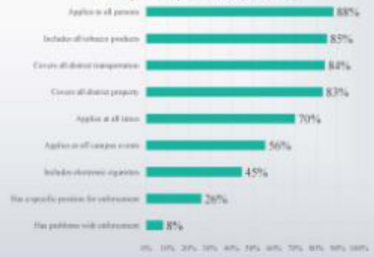


Figure 3. Missouri School District Cessation Services Offered (N=266)

Table 2. Focus Group Themes (N=9)

Tobacco use among adolescent	**Resources used to address tobacco use**
Smell of smoke on students	Outside resources
Parents who smoke	Prevention programs
Secondhand smoke exposure in homes	Emphasis on health consequences
Asthma	**Barriers for school nurses**
Respiratory illness	School staff who smoke
Disciplinary action	Weak school tobacco policies
E-cigarettes	Low state tobacco tax
Scope of the problem	No Master Settlement Agreement funds
Barriers to cessation	**Facilitators of cessation**
Tobacco use on school property	Strong school policies
No training for nurses	Living in a smokefree community
Other drug use	Student motivation
No existing cessation programs	**Desire for cessation toolkit and training**
Student motivation to quit is variable	Desire for cessation toolkit
Time constraints	Training format
	Involving other stakeholders

RESULTS

- Themes that emerged from the key informant interviews included: violations of school district tobacco-free policies, current methods of cessation are non-existent or inconsistent, and a lack of cessation tools and training.
- Survey respondents indicated that many district tobacco policies have gaps, such as not indicating a specific position for enforcement (74%), or not including e-cigarettes (45%). Beyond general advice to quit, most districts do not provide cessation services to students.
- Themes that emerged from the focus group included: concern about student tobacco use, a lack of training in cessation, a lack of cessation tools or resources, a need for evidence-based tools and training, and barriers, such as time constraints, to offering cessation services.

CONCLUSIONS

- Not all Missouri school districts have comprehensive tobacco free policies that cover all people, all places, all times, and all tobacco products.
- School nurses are concerned about student tobacco use but do not have the tools or training necessary to assist with cessation efforts.
- This pilot data indicates a need and support for the development of evidence-based adolescent cessation tools and trainings to be utilized by school nurses.

APPENDIX C: Pilot Pre-Questionnaire

1. Middle Initial:

2. Date of Birth (MM/DD/YY):

3. Occupation:

- School Nurse (RN)
- School Nurse (LPN)
- Health Aide
- Health or PE Teacher
- Counselor
- Administrator
- Social Worker

4. Number of years in your current occupation:

5. Gender

- Female
- Male

6. School district enrollment size:

- <1,000
- 1,000-2,999
- 3,000-4,999
- 5,000 or more

7. Race and ethnicity (Mark all that apply)

- White
- Black/African American
- Hispanic
- Asian/Pacific Islander
- American Indian/Alaskan Native
- Other
    - Please specify:

8. Overall, would you say that...

	Not at all addictive	Moderately addictive	Very ddictive
Cigarette smoking is:			
Electronic Nicotine Delivery System (e-cigarette) smoking is:			
Cigar smoking is:			
Smokeless tobacco use is:			

9. How harmful do you think…

	Not at all harmful	Moderately harmful	Very harmful
Cigarette smoking is to a person's health			
Electronic Nicotine Delivery System (e-cigarette) smoking is to a person's health			
Cigar smoking is to a person's health			
Smokeless tobacco use is to a person's health			

10. How long do you think someone has to smoke before it harms their health? Would you say…

- Less than a year
- 1 year
- 5 years
- 10 years
- 20 years or more

11. How much do you think people harm themselves when they use tobacco some days but not every days? Would you say…

- Not at all
- A little
- Somewhat
- A lot

12. Tobacco Education, Prevention & Cessation

	Strongly Disagree	Disagree	Agree	Strongly Agree
I am able to prevent some students from using tobacco				
I am able to convince some students to quit tobacco				
I am knowledgeable about public health and policies related to tobacco (e.g., age requirements for tobacco purchases, limits on tobacco advertising).				
When a student has multiple health problems, I am less inclined to talk about tobacco use				
I feel confident discussing tobacco cessation and prevention with students				
I feel confident discussing a student's tobacco use with their parents.				
I have an impact on student's tobacco use behaviors				

13. Evidence-Based Practice

	None of the time	Some of the time	Most of the time	All of the time
I am aware of evidence-based practice (EBP) in general				
I understand the concept of evidence-based practice well enough to explain it to a peer				
The use of evidence-based practice is important to me personally				
The use of evidence-based practice is important to others in my profession				

APPENDIX D: Pilot Post-Questionnaire

1. Middle Initial:

2. Date of Birth (MM/DD/YY):

3. Overall, would you say that…

	Not at all addictive	Moderately addictive	Very addictive
Cigarette smoking is:			
Electronic Nicotine Delivery System (e-cigarette) smoking is:			
Cigar smoking is:			
Smokeless tobacco use is:			

4. How harmful do you think…

	Not at all harmful	Moderately harmful	Very harmful
Cigarette smoking is to a person's health			
Electronic Nicotine Delivery System (e-cigarette) smoking is to a person's health			
Cigar smoking is to a person's health			
Smokeless tobacco use is to a person's health			

5. How long do you think someone has to smoke before it harms their health? Would you say…

- Less than a year
- 1 year
- 5 years
- 10 years
- 20 years or more

6. How much do you think people harm themselves when they use tobacco some days but not every days? Would you say…

- Not at all
- A little
- Somewhat
- A lot

7.

	Strongly Disagree	Disagree	Agree	Strongly Agree
I am able to prevent some students from using tobacco				
I am able to convince some students to quit tobacco				
I am knowledgeable about public health and policies related to tobacco (e.g., age requirements for tobacco purchases, limits on tobacco advertising).				
When a student has multiple health problems, I am less inclined to talk about tobacco use				
I feel confident discussing tobacco cessation and prevention with students				
I feel confident discussing a student's tobacco use with their parents.				
I have an impact on student's tobacco use behaviors				

8.

	None of the time	Some of the time	Most of the time	All of the time
I am aware of evidence-based practice (EBP) in general				
I understand the concept of evidence-based practice well enough to explain it to a peer				
The use of evidence-based practice is important to me personally				
The use of evidence-based practice is important to others in my profession				

APPENDIX E: Pre-Questionnaire

ACES Pre-Questionnaire

The present survey is part of an investigation to discover some of the reasons why school nurses may or may not be able to help adolescents quit tobacco use. Specifically, we are interested in your personal opinions regarding helping an adolescent quit his or her tobacco use in the upcoming year. By quitting tobacco use we mean working directly with an adolescent in the school setting to formulate a quit plan and provide support during the quit attempt. Please read each question carefully and answer it to the best of your ability. Your participation in this survey is voluntary. There are no correct or incorrect responses; we are merely interested in your personal point of view. Please complete questions 1-5 to create a unique identifier code and questions 6-9 to provide the researcher with a way to contact you. This is needed for follow-up surveys. In addition, 10 participants will be randomly selected to receive $100 gift cards as a token of appreciation for your time. However, all responses to this survey are completely confidential. No one will see any individual's responses other than the researcher, and findings will be de-identified and pooled together during reporting. All identifying information will be removed from this questionnaire as soon as all data has been collected. This survey takes approximately 10 minutes to complete. Thank you for your participation in this study.

Q1 Middle initial:

Q2 Day of birth (numerical: 1, 2, 3, 4, 5...):

Q5 Month of birth (numerical: January=1, December=12):

Q4 Number of siblings you have (numerical: 0, 1, 2,3...):

Q3 Year of high school graduation (numerical: YYYY):

Q6 Your school email address:

Q7 Your non-school email address:

Q8 Your school phone number:

Q9 Your non-school phone number:

Q10 Gender:

❍ Male (1)
❍ Female (2)

Q11 Age (in years):

Q12 Race:

- ❍ White (1)
- ❍ Black or African American (2)
- ❍ American Indian or Alaska Native (3)
- ❍ Asian (4)
- ❍ Native Hawaiian or Pacific Islander (5)
- ❍ Multi-racial (6)
- ❍ Other race (7)

Q13 Ethnicity:

- ❍ Hispanic (1)
- ❍ Non-Hispanic (2)

Q14 Education (highest level completed):

- ❍ ADN (1)
- ❍ Diploma (2)
- ❍ BA (3)
- ❍ BS (4)
- ❍ BSN (5)
- ❍ MA (6)
- ❍ MSN (7)
- ❍ Doctorate (8)

Q15 Staff position:

- ❍ LPN (1)
- ❍ RN (2)
- ❍ Health Services Coordinator (3)
- ❍ Other (4)

Q16 Years of service in school nursing:

Q17 Primary school type:

- ❍ Public (1)
- ❍ Charter (2)
- ❍ Private (3)
- ❍ Parochial (4)
- ❍ Alternative (5)
- ❍ Vocational (6)
- ❍ Other (7)

Q39 What grades do you serve? (check all that apply) Scroll down to view all options (Pre-K through 12th).

- ❍ Pre-K (1)
- ❍ Kindergarten (2)
- ❍ 1st (3)
- ❍ 2nd (4)
- ❍ 3rd (5)
- ❍ 4th (6)
- ❍ 5th (7)
- ❍ 6th (8)
- ❍ 7th (9)
- ❍ 8th (10)
- ❍ 9th (11)
- ❍ 10th (12)
- ❍ 11th (13)
- ❍ 12th (14)

Q40 Number of school buildings you serve:

Q41 Enrollment in each building you serve:

Q20 School district enrollment:

Q42 Do any of the schools you serve have a school based health center?

- ❍ Yes (1)
- ❍ No (2)

Q43 Do you have any formal education or training in tobacco cessation?

- ❍ Yes (1)
- ❍ No (3)

Q44 Who is your employer?

- ❍ School district (1)
- ❍ Health department (2)
- ❍ Hospital (3)
- ❍ Other (4)

Q45 Are you employed in the state of Missouri?

- ❍ Yes (1)
- ❍ No (2)

Q46 Do you have internet access in your office?

- ❍ Yes (1)
- ❍ No (2)

Q38 During the past year, I have provided evidence-based strategies to adolescents on ways to quit tobacco.

- ❍ True (1)
- ❍ False (2)

Q24 In the past year, I have helped an adolescent quit tobacco.

- ❍ True (1)
- ❍ False (2)

Display This Question:

If In the past year, I have helped an adolescent quit tobacco. True Is Selected

Q23 Number of adolescents I have helped quit tobacco in the past year (numerical):

Q25 Please answer each of the following questions by selecting the response that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each questions carefully.

	1 - Extremely Unlikely (1)	2 (2)	3 (3)	4 - Equally Unlikely and Likely (4)	5 (5)	6 (6)	7 - Extremely Likely (7)
Helping an adolescent quit his/her tobacco use will be professionally rewarding: (1)							
Helping an adolescent quit his/her tobacco use will be personally rewarding: (2)							
Helping an adolescent quit his/her tobacco use is a new opportunity to improve his/her health: (3)							
Helping an adolescent quit his/her tobacco use will help me to develop new skills: (4)							
Helping an adolescent quit his/her tobacco use will help me learn new information on this topic: (5)							

Helping an adolescent quit his/her tobacco use is a waste of my time: (6)							
Helping an adolescent quit his/her tobacco use is a good use of time and resources: (7)							

Q 26

	1 - Extremely Valuable (1)	2 (2)	3 (3)	4 - Neither Valuable Nor Worthless (4)	5 (5)	6 (6)	7 - Extremely Worthless (7)
For me, helping an adolescent quit his/her tobacco use is: (1)							

Q27

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
It is expected of me that I help adolescents quit tobacco: (1)							

Q28

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Most people whose opinions I value would approve of my helping an adolescent quit his/her tobacco use: (1)							

Q29

	1 - Not at All (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Much (7)
Generally speaking, how much do you care what your administration thinks you should do? (1)							
Generally speaking, how much do you care what other nurses think you should do? (2)							

Q30

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
My administration thinks that I should help adolescents quit tobacco: (1)							
My colleagues think that I should help adolescents quit tobacco: (2)							
The guardians of adolescents think that I should help adolescents quit tobacco: (3)							
Most nurses like me would help an adolescent quit his/her tobacco use in the upcoming year: (4)							

Q31

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
I am confident that I can help an adolescent quit his/her tobacco use in the upcoming year: (1)							
I am confident that if I wanted to I could help an adolescent quit his/her tobacco use: (2)							

Q32

	1 - Extremely Difficult (1)	2 (2)	3 (3)	4 - Neither Difficult Nor Easy (4)	5 (5)	6 (6)	7 - Extremely Easy (7)
For me, helping an adolescent quit his/her tobacco use in the upcoming year is: (1)							

Q33

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Whether or not I help an adolescent quit his/her tobacco use is completely up to me: (1)							
If I did not receive training for this topic area, it would make it difficult for me to help adolescents quit tobacco on a regular basis: (2)							

Q34

	1 - Impossible (1)	2 (2)	3 (3)	4 - Neither Impossible Nor Possible (4)	5 (5)	6 (6)	7 - Possible (7)
For me, to help an adolescent quit his/her tobacco use is: (1)							

Q35

	1 - Very Rarely (1)	2 (2)	3 (3)	4 - Neither Rarely Nor Frequently (4)	5 (5)	6 (6)	7 - Very Frequently (7)
How often do you encounter unanticipated events that place demands on your time? (1)							
How often do you feel very busy at work? (2)							

Q36

	1 - Strongly Agree (1)	2 (2)	3 (3)	4 - Neither Agree Nor Disagree (4)	5 (5)	6 (6)	7 - Strongly Disagree (7)
I intend to help adolescents quit tobacco this year: (1)							

Q37

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
I plan to help an adolescent quit his/her tobacco use in the upcoming year: (1)							

APPENDIX F: Post-Questionnaire

ACES Post-Questionnaire (II Only)

Q25 Dear School Nurse,Many of these questions are VERY SIMILAR to the first questionnaire you completed. For the purposes of this research project, it is very important that you also complete this questionnaire. This questionnaire takes approximately 5-8 minutes to complete. Thank you for your participation in this study. At the end of the questionnaire you will have the opportunity to enter your mailing address in order to receive a printed copy of the full ACES toolkit.

Q1 Middle initial:

Q2 Day of birth (numerical: 1, 2, 3, 4, 5...):

Q5 Month of birth (numerical: January=1, December=12):

Q4 Number of siblings you have (numerical: 0, 1, 2,3...):

Q3 Year of high school graduation (numerical: YYYY):

Q49 I watched the ACES tutorial video.

- ❍ Yes, completely (1)
- ❍ Yes, partially (2)
- ❍ No (3)

Q38 During the past year, I have provided evidence-based strategies to adolescents on ways to quit tobacco.

- ❍ True (1)
- ❍ False (2)

Q24 In the past year, I have helped an adolescent quit tobacco.

- ❍ True (1)
- ❍ False (2)

Display This Question:

If In the past year, I have helped an adolescent quit tobacco. True Is Selected

Q23 Number of adolescents I have helped quit tobacco in the past year (numerical):

Q25 Please answer each of the following questions by selecting the response that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each questions carefully.

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
Helping an adolescent quit his/her tobacco use will be professionally rewarding: (1)							
Helping an adolescent quit his/her tobacco use will be personally rewarding: (2)							
Helping an adolescent quit his/her tobacco use is a new opportunity to improve his/her health: (3)							
Helping an adolescent quit his/her tobacco use will help me to develop new skills: (4)							

Helping an adolescent quit his/her tobacco use will help me learn new information on this topic: (5)							
Helping an adolescent quit his/her tobacco use is a waste of my time: (6)							
Helping an adolescent quit his/her tobacco use is a good use of time and resources: (7)							

Q26

	1 - Extremely Valuable (1)	2 (2)	3 (3)	4 - Neither Valuable Nor Worthless (4)	5 (5)	6 (6)	7 - Extremely Worthless (7)
For me, helping an adolescent quit his/her tobacco use is: (1)							

Q27

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
It is expected of me that I help adolescents quit tobacco: (1)							

Q28

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Most people whose opinions I value would approve of my helping an adolescent quit his/her tobacco use: (1)							

Q29

	1 - Not at All (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Much (7)
Generally speaking, how much do you care what your administration thinks you should do? (1)							
Generally speaking, how much do you care what other nurses think you should do? (2)							

Q30

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
My administration thinks that I should help adolescents quit tobacco: (1)							
My colleagues think that I should help adolescents quit tobacco: (2)							
The guardians of adolescents think that I should help adolescents quit tobacco: (3)							
Most nurses like me would help an adolescent quit his/her tobacco use in the upcoming year: (4)							

Q31

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
I am confident that I can help an adolescent quit his/her tobacco use in the upcoming year: (1)							
I am confident that if I wanted to I could help an adolescent quit his/her tobacco use: (2)							

Q32

	1 - Extremely Difficult (1)	2 (2)	3 (3)	4 - Neither Difficult Nor Easy (4)	5 (5)	6 (6)	7 - Extremely Easy (7)
For me, helping an adolescent quit his/her tobacco use in the upcoming year is: (1)							

Q33

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Whether or not I help an adolescent quit his/her tobacco use is completely up to me: (1)							
If I did not receive training for this topic area, it would make it difficult for me to help adolescents quit tobacco on a regular basis: (2)							

Q34

	1 - Impossible (1)	2 (2)	3 (3)	4 - Neither Impossible Nor Possible (4)	5 (5)	6 (6)	7 - Possible (7)
For me, to help an adolescent quit his/her tobacco use is: (1)							

Q35

	1 - Very Rarely (1)	2 (2)	3 (3)	4 - Neither Rarely Nor Frequently (4)	5 (5)	6 (6)	7 - Very Frequently (7)
How often do you encounter unanticipated events that place demands on your time? (1)							
If I did not receive training for this topic area, it would make it difficult for me to help adolescents quit tobacco on a regular basis: (2)							

Q36

	1 - Strongly Agree (1)	2 (2)	3 (3)	4 - Neither Agree Nor Disagree (4)	5 (5)	6 (6)	7 - Strongly Disagree (7)
I intend to help adolescents quit tobacco this year: (1)							

Q37

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
I plan to help an adolescent quit his/her tobacco use in the upcoming year: (1)							

Q39

	1 - Very Difficult (1)	2 (2)	3 (3)	4 - Neither Difficulty Nor Easy (4)	5 (5)	6 (6)	7 - Very Easy (7)
How easy was the ACES tutorial for you to use? (1)							

Q40

	1 - Difficulty to Understand (1)	2 (2)	3 (3)	4 - Neither Difficulty Nor Easy to Understand (4)	5 (5)	6 (6)	7 - Easy to Understand (7)
How understandable was the ACES tutorial? (1)							

Q41

	1 - Not at All Enjoyable (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Enjoyable (7)
How much did you enjoy viewing the ACES tutorial? (1)							

Q43

	1 - Very Unacceptable (1)	2 (2)	3 (3)	4 - Neither Unacceptable Nor Acceptable (4)	5 (5)	6 (6)	7 - Very Acceptable (7)
Was the amount of time it took to view the ACES tutorial acceptable? (1)							

Q44

	1 - Very Unlikely (1)	2 (2)	3 (3)	4 - Neither Unlikely Nor Likely (4)	5 (5)	6 (6)	7 - Very Likely (7)
How likely are you to recommend the ACES tutorial to another school nurse? (1)							

Q45

	1 - Very ineffective (1)	2 (2)	3 (3)	4 - Neither Ineffective Nor Effective (4)	5 (5)	6 (6)	7 - Very Effective (7)
How effectively does the ACES tutorial help you deal with adolescent tobacco use? (1)							

Q46

	1 - Very Dissatisfied (1)	2 (2)	3 (3)	4 - Neither Dissatisfied Nor Satisfied (4)	5 (5)	6 (6)	7 - Very Satisfied (7)
How would you rate your overall satisfaction with the ACES tutorial? (1)							
How satisfied are you with the knowledge you gained? (2)							

Q47 Would you like to receive a printed copy of the ACES toolkit?

- ❍ Yes (4)
- ❍ No (5)

If Yes Is Selected, Then Skip To What is your mailing address?

Q48 What is your mailing address?

APPENDIX G: ACES Pre-Questionnaire 2 (WC Only)

ACES Pre-Questionnaire 2 (WC Only)

Q25 Dear School Nurse,Many of these questions are VERY SIMILAR to the first questionnaire you completed. For the purposes of this research project, it is very important that you also complete this questionnaire. Next week you will be sent the online ACES tutorial. This questionnaire takes approximately 5-8 minutes to complete. Thank you for your participation in this study.

Q1 Middle initial:

Q2 Day of birth (numerical: 1, 2, 3, 4, 5...):

Q5 Month of birth (numerical: January=1, December=12):

Q4 Number of siblings you have (numerical: 0, 1, 2,3...):

Q3 Year of high school graduation (numerical: YYYY):

Q38 During the past year, I have provided evidence-based strategies to adolescents on ways to quit tobacco.

- ❍ True (1)
- ❍ False (2)

Q24 In the past year, I have helped an adolescent quit tobacco.

- ❍ True (1)
- ❍ False (2)

Display This Question:

If In the past year, I have helped an adolescent quit tobacco. True Is Selected

Q23 Number of adolescents I have helped quit tobacco in the past year (numerical):

Q25 Please answer each of the following questions by selecting the response that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each questions carefully.

	1 - Extremely Unlikely (1)	2 (2)	3 (3)	4 - Equally Unlikely and Likely (4)	5 (5)	6 (6)	7 - Extremely Likely (7)
Helping an adolescent quit his/her tobacco use will be professionally rewarding: (1)							
Helping an adolescent quit his/her tobacco use will be personally rewarding: (2)							
Helping an adolescent quit his/her tobacco use is a new opportunity to improve his/her health: (3)							
Helping an adolescent quit his/her tobacco use will help me to develop new skills: (4)							
Helping an adolescent quit his/her tobacco use will help me learn new information on this topic: (5)							

Helping an adolescent quit his/her tobacco use is a waste of my time: (6)							
Helping an adolescent quit his/her tobacco use is a good use of time and resources: (7)							

Q26

	1 - Extremely Valuable (1)	2 (2)	3 (3)	4 - Neither Valuable Nor Worthless (4)	5 (5)	6 (6)	7 - Extremely Worthless (7)
For me, helping an adolescent quit his/her tobacco use is: (1)							

Q27

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
It is expected of me that I help adolescents quit tobacco: (1)							

Q28

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Most people whose opinions I value would approve of my helping an adolescent quit his/her tobacco use: (1)							

Q29

	1 - Not at All (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Much (7)
Generally speaking, how much do you care what your administration thinks you should do? (1)							
Generally speaking, how much do you care what other nurses think you should do? (2)							

Q30

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
My administration thinks that I should help adolescents quit tobacco: (1)							
My colleagues think that I should help adolescents quit tobacco: (2)							
The guardians of adolescents think that I should help adolescents quit tobacco: (3)							
Most nurses like me would help an adolescent quit his/her tobacco use in the upcoming year: (4)							

Q31

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
I am confident that I can help an adolescent quit his/her tobacco use in the upcoming year: (1)							
I am confident that if I wanted to I could help an adolescent quit his/her tobacco use: (2)							

Q32

	1 - Extremely Difficult (1)	2 (2)	3 (3)	4 - Neither Difficult Nor Easy (4)	5 (5)	6 (6)	7 - Extremely Easy (7)
For me, helping an adolescent quit his/her tobacco use in the upcoming year is: (1)							

Q33

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Whether or not I help an adolescent quit his/her tobacco use is completely up to me: (1)							
If I did not receive training for this topic area, it would make it difficult for me to help adolescents quit tobacco on a regular basis: (2)							

Q34

	1 - Impossible (1)	2 (2)	3 (3)	4 - Neither Impossible Nor Possible (4)	5 (5)	6 (6)	7 - Possible (7)
For me, to help an adolescent quit his/her tobacco use is: (1)							

Q35

	1 - Very Rarely (1)	2 (2)	3 (3)	4 - Neither Rarely Nor Frequently (4)	5 (5)	6 (6)	7 - Very Frequently (7)
How often do you encounter unanticipated events that place demands on your time? (1)							
How often do you feel very busy at work? (2)							

Q36

	1 - Strongly Agree (1)	2 (2)	3 (3)	4 - Neither Agree Nor Disagree (4)	5 (5)	6 (6)	7 - Strongly Disagree (7)
I intend to help adolescents quit tobacco this year: (1)							

Q37

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
I plan to help an adolescent quit his/her tobacco use in the upcoming year: (1)							

APPENDIX H: Follow-Up Questionnaire

ACES Follow-Up

Q25 Dear School Nurse, Thank you for completing the ACES tutorial! You are now being provided with a link to the final follow-up questionnaire. Completing this questionnaire will enter you into a drawing to win one of ten $100 gift cards. Thank you for your participation in this study.

Q1 Middle initial:

Q2 Day of birth (numerical: 1, 2, 3, 4, 5...):

Q5 Month of birth (numerical: January=1, December=12):

Q4 Number of siblings you have (numerical: 0, 1, 2,3...):

Q3 Year of high school graduation (numerical: YYYY):

Q49 Did you receive a printed copy of the ACES toolkit in the mail?

- ❍ Yes (1)
- ❍ No (2)

If No Is Selected, Then Skip To Would you like to receive a printed c...If Yes Is Selected, Then Skip To End of Block

Q53 Would you like to receive a printed copy of the full ACES toolkit?

- ❍ Yes (4)
- ❍ No (5)

If Yes Is Selected, Then Skip To Mailing address:If No Is Selected, Then Skip To End of Block

Q54 Mailing address:

Q38 During the past year, I have provided evidence-based strategies to adolescents on ways to quit tobacco.

- ❍ True (1)
- ❍ False (2)

Q24 In the past year, I have helped an adolescent quit tobacco.

❍ True (1)
❍ False (2)

Display This Question:
If In the past year, I have helped an adolescent quit tobacco. True Is Selected
Q23 Number of adolescents I have helped quit tobacco in the past year (numerical):

Q25 Please answer each of the following questions by selecting the response that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each questions carefully.

	1 - Extremely Unlikely (1)	2 (2)	3 (3)	4 - Equally Unlikely and Likely (4)	5 (5)	6 (6)	7 - Extremely Likely (7)
Helping an adolescent quit his/her tobacco use will be professionally rewarding: (1)							
Helping an adolescent quit his/her tobacco use will be personally rewarding: (2)							
Helping an adolescent quit his/her tobacco use is a new opportunity to improve his/her health: (3)							
Helping an adolescent quit his/her tobacco use will help me to develop new skills: (4)							

Helping an adolescent quit his/her tobacco use will help me learn new information on this topic: (5)							
Helping an adolescent quit his/her tobacco use is a waste of my time: (6)							
Helping an adolescent quit his/her tobacco use is a good use of time and resources: (7)							

Q26

	1 - Extremely Valuable (1)	2 (2)	3 (3)	4 - Neither Valuable Nor Worthless (4)	5 (5)	6 (6)	7 - Extremely Worthless (7)
For me, helping an adolescent quit his/her tobacco use is: (1)							

Q27

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
It is expected of me that I help adolescents quit tobacco: (1)							

Q28

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Most people whose opinions I value would approve of my helping an adolescent quit his/her tobacco use: (1)							

Q29

	1 - Not at All (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Much (7)
Generally speaking, how much do you care what your administration thinks you should do? (1)							
Generally speaking, how much do you care what other nurses think you should do? (2)							

Q30

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
My administration thinks that I should help adolescents quit tobacco: (1)							
My colleagues think that I should help adolescents quit tobacco: (2)							
The guardians of adolescents think that I should help adolescents quit tobacco: (3)							
Most nurses like me would help an adolescent quit his/her tobacco use in the upcoming year: (4)							

Q31

	1 - Definitely True (1)	2 (2)	3 (3)	4 - Neither True Nor False (4)	5 (5)	6 (6)	7 - Definitely False (7)
I am confident that I can help an adolescent quit his/her tobacco use in the upcoming year: (1)							
I am confident that if I wanted to I could help an adolescent quit his/her tobacco use: (2)							

Q32

	1 - Extremely Difficult (1)	2 (2)	3 (3)	4 - Neither Difficult Nor Easy (4)	5 (5)	6 (6)	7 - Extremely Easy (7)
For me, helping an adolescent quit his/her tobacco use in the upcoming year is: (1)							

Q33

	1 - Strongly Disagree (1)	2 (2)	3 (3)	4 - Neither Disagree Nor Agree (4)	5 (5)	6 (6)	7 - Strongly Agree (7)
Whether or not I help an adolescent quit his/her tobacco use is completely up to me: (1)							
If I did not receive training for this topic area, it would make it difficult for me to help adolescents quit tobacco on a regular basis: (2)							

Q34

	1 - Impossible (1)	2 (2)	3 (3)	4 - Neither Impossible Nor Possible (4)	5 (5)	6 (6)	7 - Possible (7)
For me, to help an adolescent quit his/her tobacco use is: (1)							

Q35

	1 - Very Rarely (1)	2 (2)	3 (3)	4 - Neither Rarely Nor Frequently (4)	5 (5)	6 (6)	7 - Very Frequently (7)
How often do you encounter unanticipated events that place demands on your time? (1)							
How often do you feel very busy at work? (2)							

Q36

	1 - Strongly Agree (1)	2 (2)	3 (3)	4 - Neither Agree Nor Disagree (4)	5 (5)	6 (6)	7 - Strongly Disagree (7)
I intend to help adolescents quit tobacco this year: (1)							

Q37

	1 - Extremely Likely (1)	2 (2)	3 (3)	4 - Neither Likely Nor Unlikely (4)	5 (5)	6 (6)	7 - Extremely Unlikely (7)
I plan to help an adolescent quit his/her tobacco use in the upcoming year: (1)							

Q39

	1 - Very Difficult (1)	2 (2)	3 (3)	4 - Neither Difficulty Nor Easy (4)	5 (5)	6 (6)	7 - Very Easy (7)
How easy was the ACES tutorial for you to use? (1)							

Q40

	1 - Difficulty to Understand (1)	2 (2)	3 (3)	4 - Neither Difficulty Nor Easy to Understand (4)	5 (5)	6 (6)	7 - Easy to Understand (7)
How understandable was the ACES tutorial? (1)							

Q41

	1 - Not at All Enjoyable (1)	2 (2)	3 (3)	4 - Neutral (4)	5 (5)	6 (6)	7 - Very Enjoyable (7)
How much did you enjoy viewing the ACES tutorial? (1)							

Q43

	1 - Very Unacceptable (1)	2 (2)	3 (3)	4 - Neither Unacceptable Nor Acceptable (4)	5 (5)	6 (6)	7 - Very Acceptable (7)
Was the amount of time it took to view the ACES tutorial acceptable? (1)							

Q44

	1 - Very Unlikely (1)	2 (2)	3 (3)	4 - Neither Unlikely Nor Likely (4)	5 (5)	6 (6)	7 - Very Likely (7)
How likely are you to recommend the ACES tutorial to another school nurse? (1)							

Q45

	1 - Very ineffective (1)	2 (2)	3 (3)	4 - Neither Ineffective Nor Effective (4)	5 (5)	6 (6)	7 - Very Effective (7)
How effectively does the ACES tutorial help you deal with adolescent tobacco use? (1)							

Q46

	1 - Very Dissatisfied (1)	2 (2)	3 (3)	4 - Neither Dissatisfied Nor Satisfied (4)	5 (5)	6 (6)	7 - Very Satisfied (7)
How would you rate your overall satisfaction with the ACES tutorial? (1)							
How satisfied are you with the knowledge you gained? (2)							

Q50 Would you like to receive a certificate of completion for the ACES tutorial?

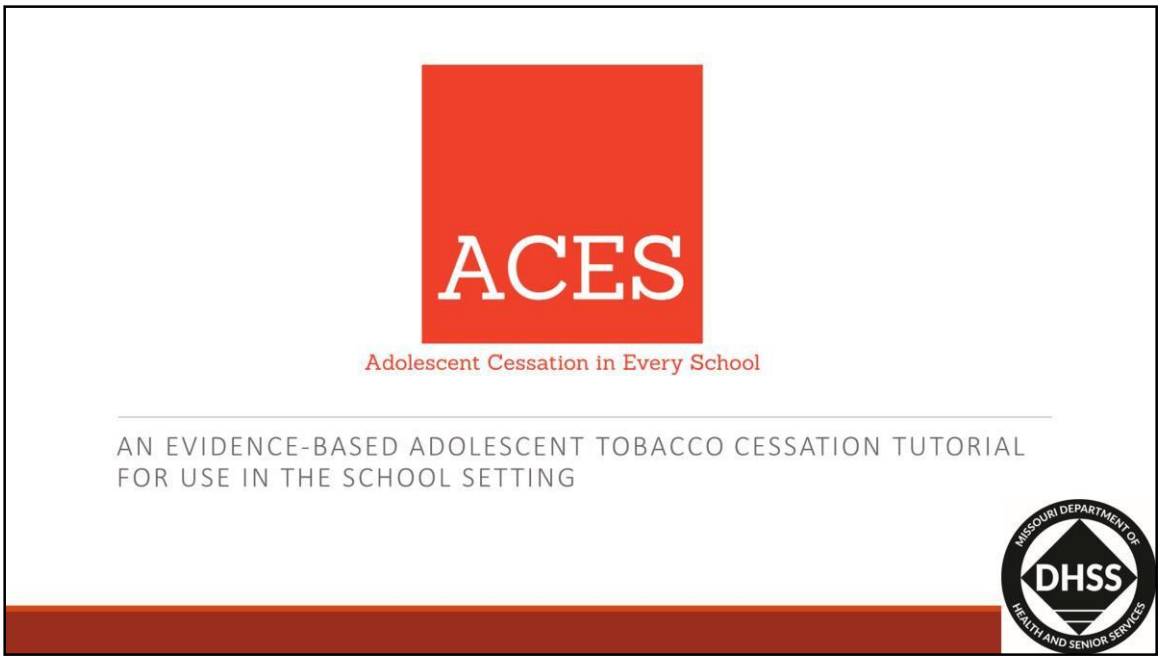
- ❍ Yes (4)
- ❍ No (5)

If No Is Selected, Then Skip To End of Survey

Q51 Your name (as you would like it to appear on the certificate)

Q52 Email address certificate should be sent to:

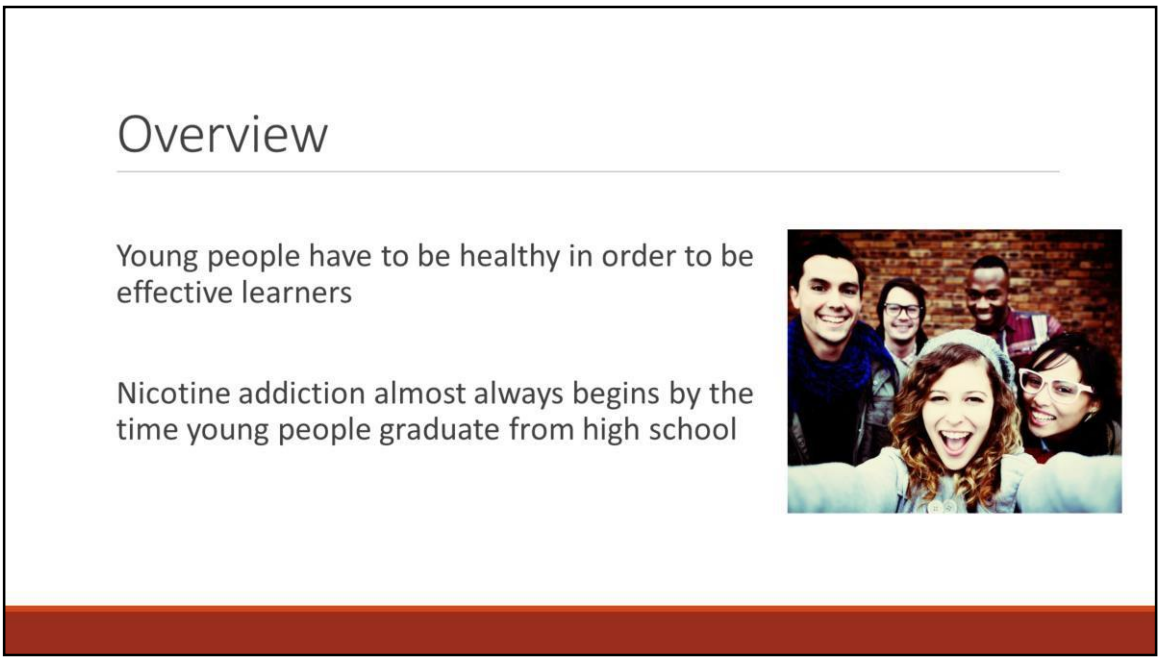
APPENDIX I: ACES Training Slides



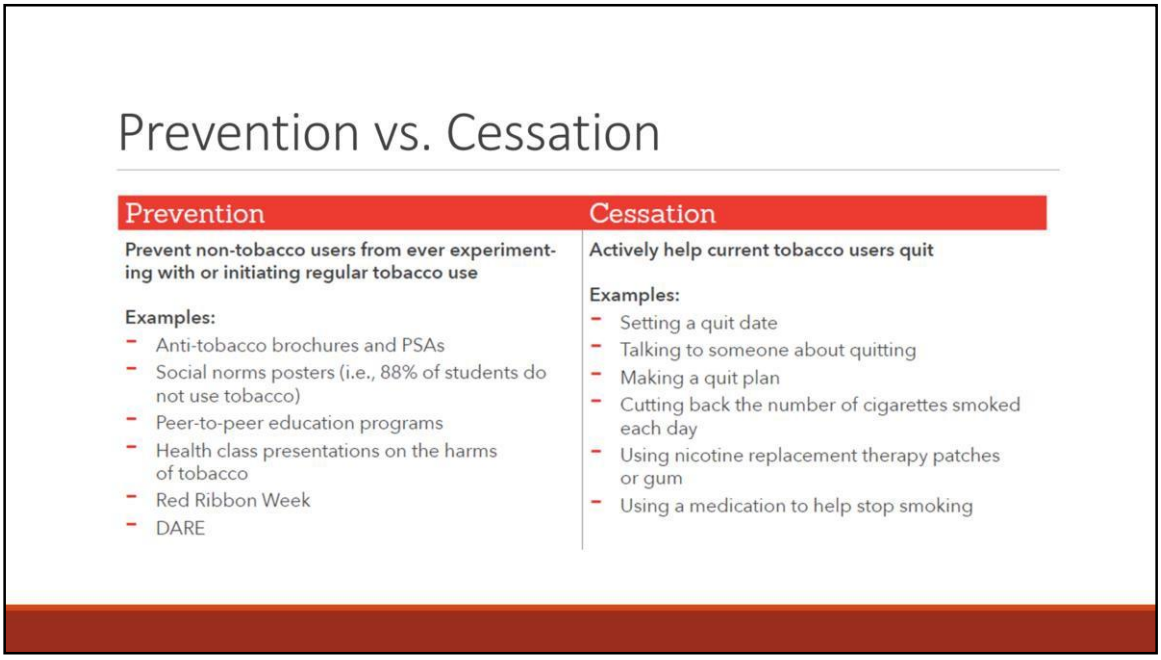
Thank you for participating in the Adolescent Cessation in Every School (ACES) tutorial. This tutorial covers the content of the ACES toolkit – a new, evidence-based resource created in partnership with the Missouri Dept of Health and Senior Services for Missouri School Nurses.

Background

First we will review important background information



The ACES toolkit was developed from the evidence-based literature and best practices for adolescent cessation. It has been reviewed by experts in tobacco cessation and school nursing and is available to you at no cost. It is designed to be used one-on-one with adolescents and does not require a group or classroom format. Schools can and should play a major role in helping young people live full and happy lives, free from addiction.



First, let's clarify the differences between tobacco prevention and tobacco cessation.

Prevention can be defined as preventing non-tobacco users from every experimenting with tobacco or initiating regular tobacco use. Examples of prevention activities include: hanging up posters about the harmful effects of tobacco use, peer-to-peer education programs, health class lessons on the harms of tobacco use, and Red Ribbon Week.

Cessation on the other hand is actively helping a current tobacco user quit. Examples of cessation activities include: talking to someone about quitting, making a quit plan, and cutting back on the amount of tobacco used each day.

Nicotine Addiction

Physiologically addiction due to nicotine + a learned habit

- Effective cessation approaches should address both

When health care professionals rank the addictiveness of drugs, nicotine tops the list – higher than methamphetamine and heroin

Nicotine addiction can occur as quickly as a few days after experimental smoking. Regular tobacco use is both a physiological addiction to the drug nicotine AND a learned habit

The adolescent body and brain are still developing, making youth especially vulnerable to addiction

The younger a person is when he or she begins using tobacco, the higher the risk that this youth will become a daily tobacco user and the less likely he or she will be to successfully quit

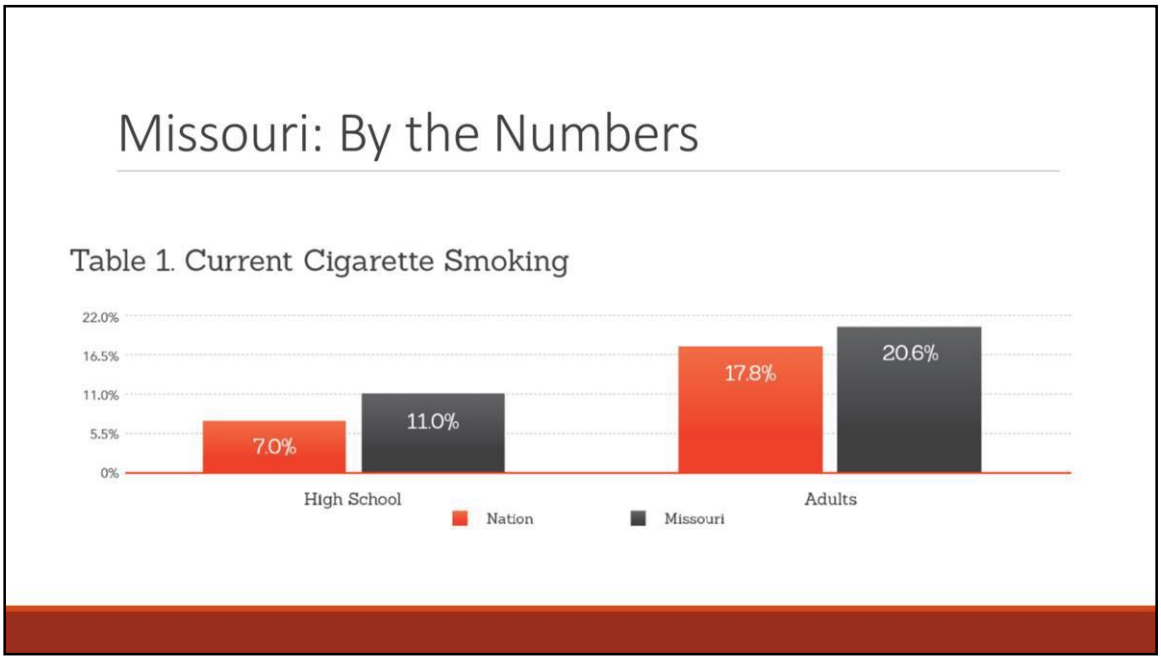
Young people use tobacco and nicotine in many forms and new products come onto the market every year. Therefore it is important to start by recognizing that all tobacco products contain the nicotine and can lead to addiction and harm.

Are there any products you see here that you are unfamiliar with? If so, you will want to spend time reading through this section of the ACES toolkit to learn more about cigarettes, cigars, snus, hookah, electronic cigarettes, smokeless tobacco, and dissolvable tobacco products. Youth are usually a target market for the tobacco industry and because they are so connected on the internet, often they are more familiar with these products than we are. This is unfortunate because there is a lot of misinformation about tobacco and experimentation can quickly lead to addiction.

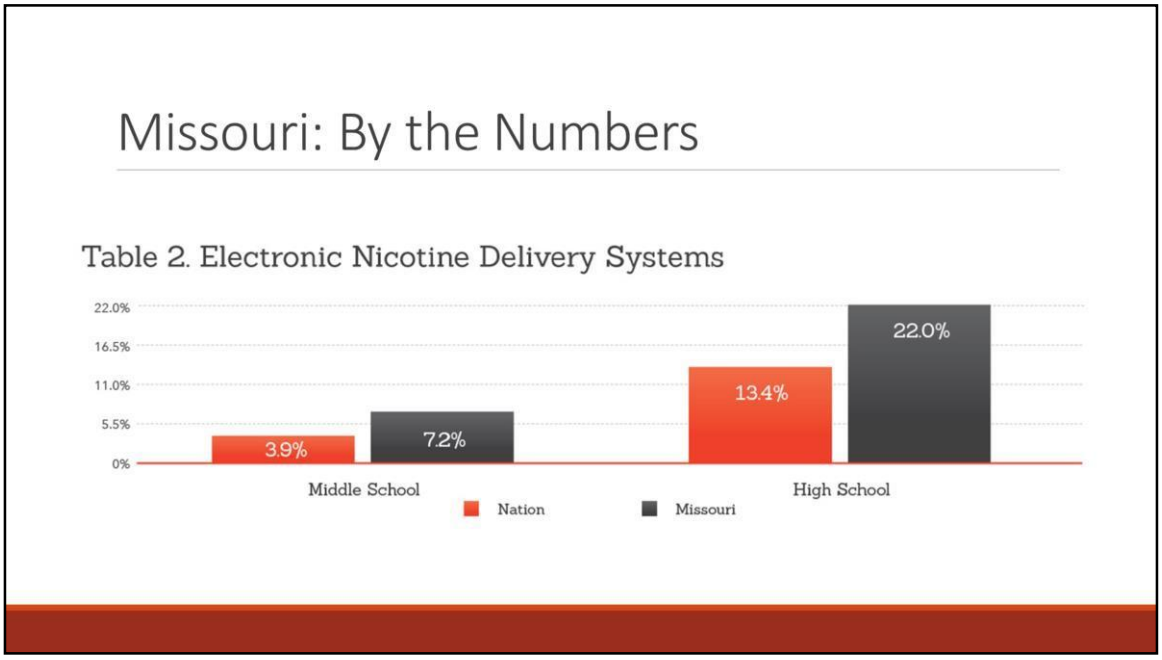
There is growing concern that initiation of electronic nicotine delivery systems (also known as e-cigarettes) are another pathway to nicotine addiction for youth. These products contain nicotine and emit a secondhand Aerosol which contains ultrafine particles and toxins that are known to cause cancer.

Currently, e-cigarettes lack of regulation. They are marketed on television, radio, billboards, online, at sporting events, in mall kiosks

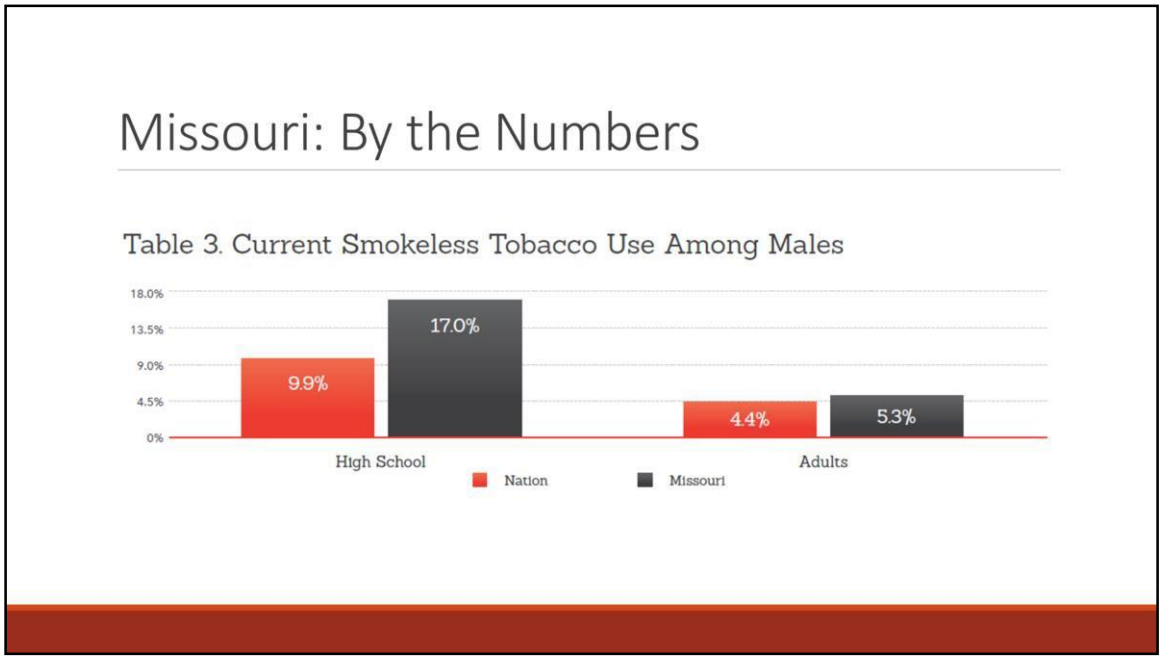
This is reminiscent of tobacco advertising in previous decades, leading youth to experiment with these addictive products. This is especially concerning because a report by the CDC found that over 250,000 youth who had never smoked a cigarette had used an e-cigarette.



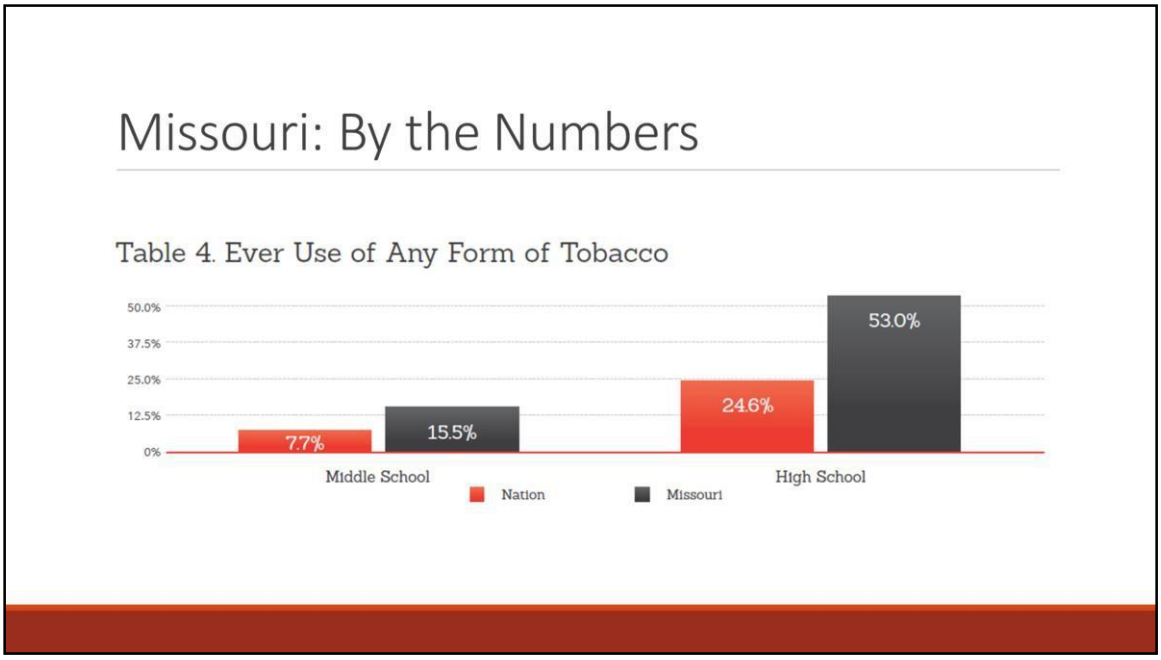
In Missouri young people use tobacco at rates that are higher than the national average. 11% of Missouri high school students are current cigarette smokers compared to only 7% of high school students nationally. While 11% still may not sound like a lot, keep in mind that this is just one type of tobacco or nicotine product that young people use.



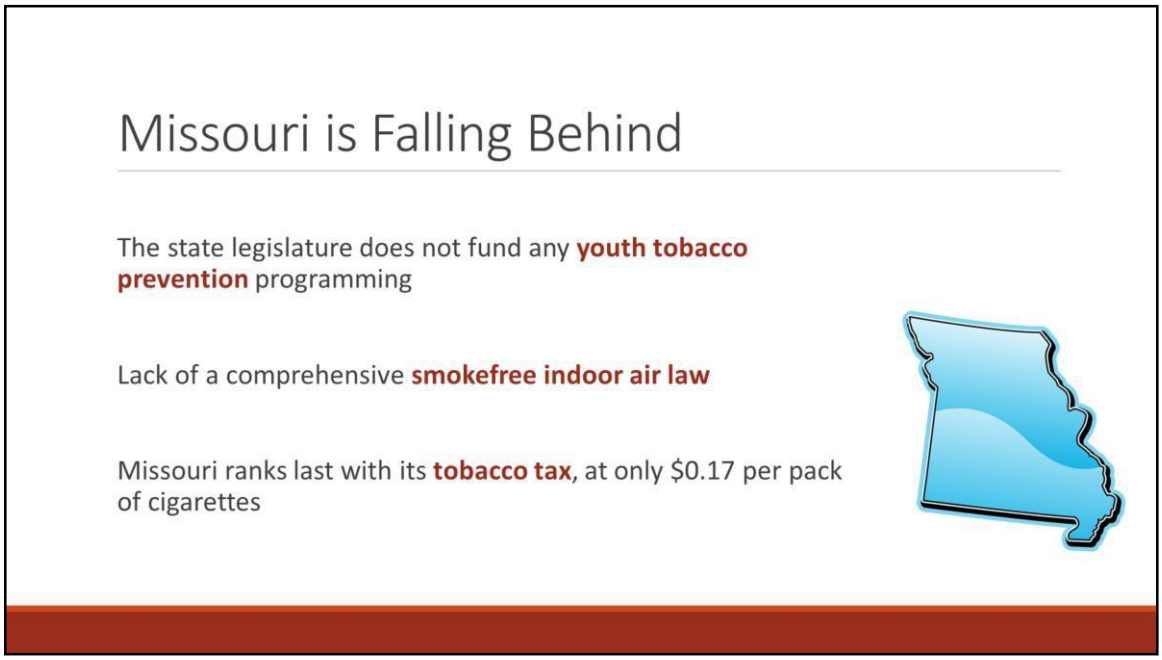
In Missouri 22%, or almost one in four, young people use electronic nicotine delivery systems (aka e-cigarettes) and 7% of middle school students are using them.



In addition, 17% of our high school boys are smokeless tobacco users.



All together, 53% of Missouri high school students report that they have used or currently some type of tobacco/nicotine product, compared to only 25% nation-wide.



Some of the challenges that we face in Missouri are not having a statewide smokefree law, not funding youth tobacco prevention campaigns and programs, and having the lowest tobacco tax in the nation at only 17 cents per pack of cigarettes. These factors are largely to blame for our high rates of adolescent tobacco use. Until we can fix these problems and do a better job as a state in preventing youth initiation, cessation services for youth are critical

Intention to Quit

48-77% of adolescent smokers have made a serious quit attempt

Quit attempts by young people are often unplanned and unassisted

Adolescent smoking cessation programs, compared with control conditions, increase the probability of quitting by approximately 46%

At this point one of the first things that people usually want to know is, do adolescents even want to quit?

Research finds that the large majority of adolescent tobacco users are thinking about quitting and somewhere between 50% to 75% of young people have made a serious attempt to quit. Unfortunately, these quit attempts usually are not planned out and they do not seek help; therefore, they are unsuccessful in their efforts to quit. The good news is that when adolescent use cessation programs, they increase their chances of successfully quitting by almost 50%.

The Need for Cessation in Schools

School districts tobacco-free policies are fall short of the "Gold Standard" if cessation is not included

Eliminates barriers such as transportation, cost, and ability to provide follow-up

Provides a treatment alternative to the usual disciplinary action for youth who violate school tobacco policies

In alignment with the Centers for Disease Control and Prevention's ***Whole School, Whole Community, Whole Child*** model

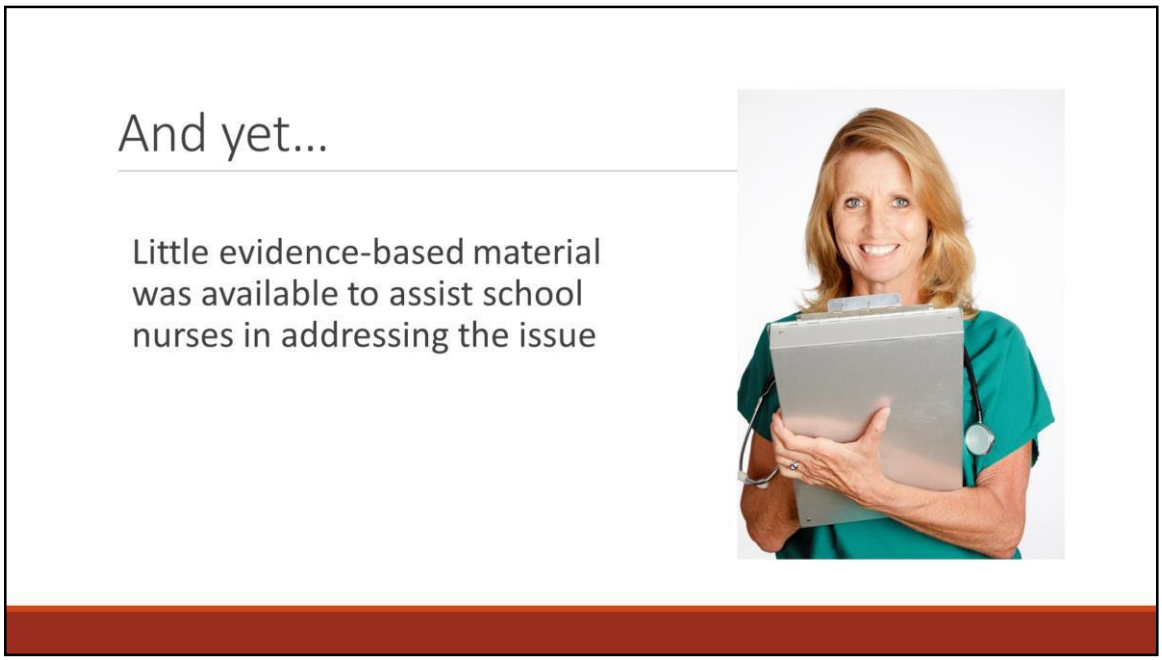
Then you might wonder, why do this in schools?

There are many reasons why schools are the best venue for a cessation intervention. One is that in order for district tobacco-free policies to be considered comprehensive and meeting the "gold standard," they should include provisions for cessation. Over the next five years our state health department is evaluating Missouri school district tobacco policies to see if they meet this gold standard, and providing technical assistance to them to strengthen their policies if they do not. As you might guess, most of our policies to not include cessation as of now.

Another good thing about this is that we can offer a treatment alternative to the usual disciplinary action for a youth caught using tobacco at school. Suspending a child for tobacco use puts them behind academically, and does nothing to address the addiction.

Cessation in schools also eliminates barriers for the youth receiving the service, such as transportation issues, cost, and ability to come back for follow up.

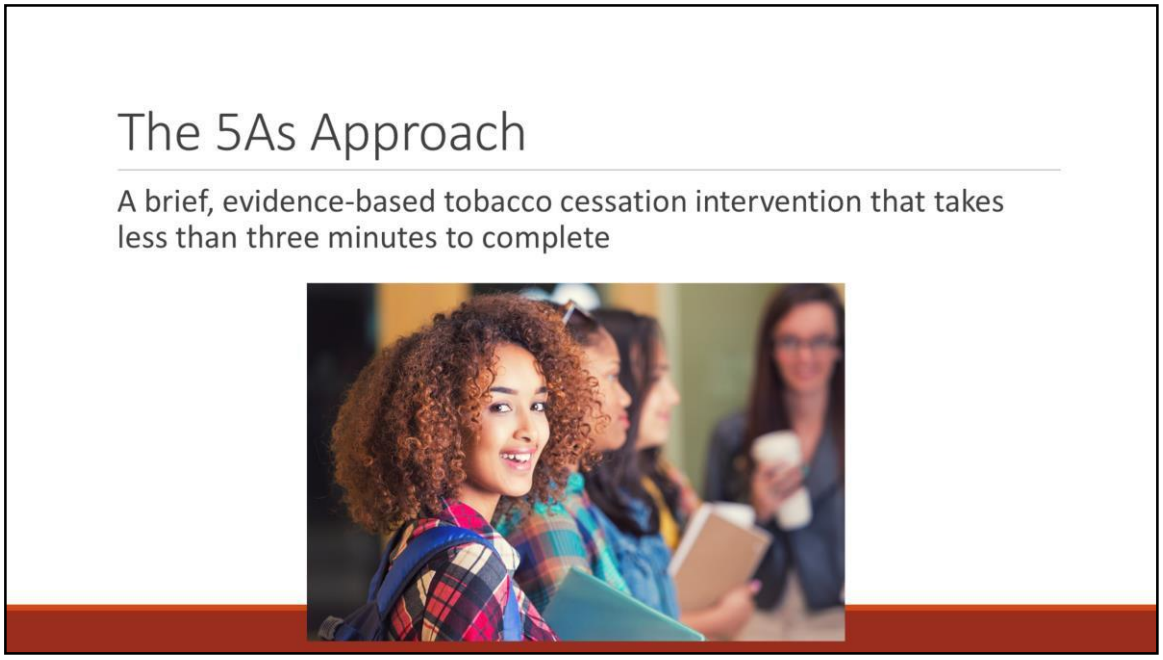
Finally, Our schools are also increasingly adopting the CDC's Whole School, Whole Community, Whole Child model in addressing student health holistically and cessation aligns with the health services component of this model.



We know that young people are using tobacco and becoming addicted to nicotine and we know that there are serious consequences of tobacco use now and in the future for these young people. Schools, and school nurses in particular, have the potential to address this problem; however, little evidence-based tobacco cessation materials were available to school nurses until now.

Implementation

Many of the tools provided in the ACES toolkit focus on helping young people quit tobacco through behavioral interventions, such as the 5 As approach, motivational interviewing, and developing a quit plan.

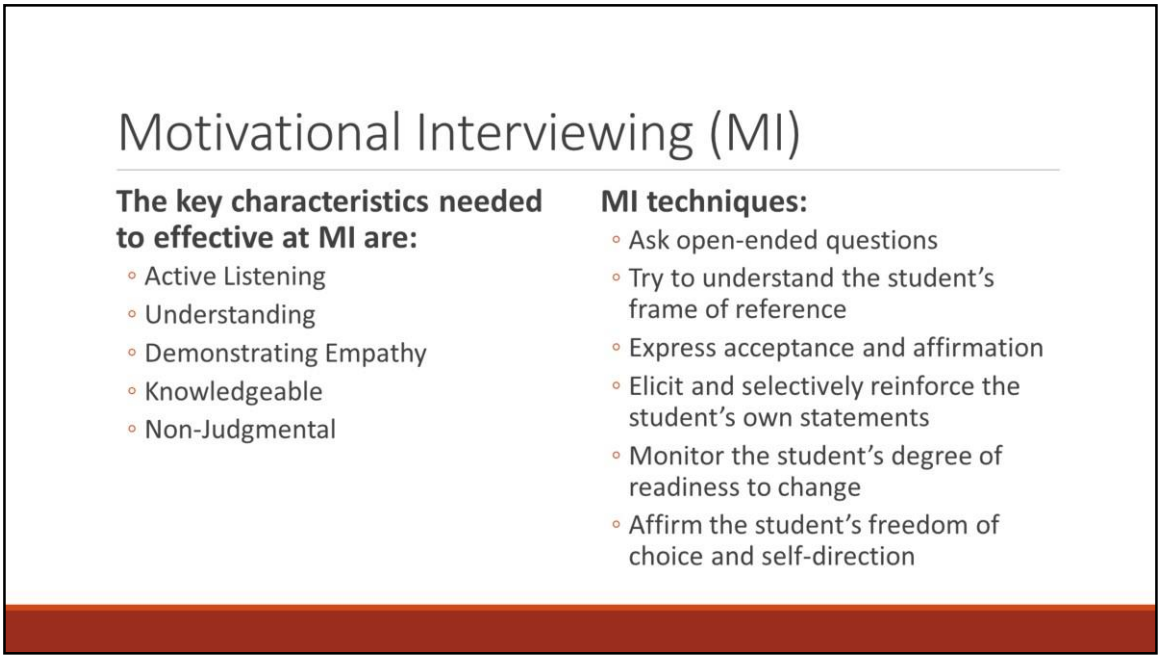


The 5 As are a brief, evidence-based tobacco cessation intervention that takes less than three minutes to complete. The American Academy of Pediatrics endorses the use of the 5As approach with adolescent tobacco users, and studies have shown it to be effective with young people.

Table 1. The "5 A's" model for treating tobacco use and dependence[1]

Ask	Ask every student about tobacco use at every visit. Identify tobacco users and document tobacco use. Example: – "Do you use any tobacco products, even occasionally?"
Advise	Advise tobacco users to quit. In a clear, strong, and personalized manner, urge every tobacco user to quit. Example: – "I think it is important for you to quit now and I can help you. Nicotine is an addictive drug, and the longer you use tobacco the harder it will be to quit."
Assess	Assess willingness to make a quit attempt. Example: – "On a scale from 0 to 10, how motivated are you to quit?" – "Have you ever tried to quit on your own?" – "Do you want to quit within the next month?"
Assist	For persons who want to quit: Assist the young person in making a quit attempt. Help him/her set a quit date, complete the quit plan (see page 23), identify coping strategies, and provide one-on-one support throughout the quit attempt. For persons who are uninterested in quitting: Implement motivational interviewing techniques to increase future quit attempts (see page 22).
Arrange	Arrange follow-up, especially on and following the quit date. Example: – During follow-up visits, success should be congratulated. If the individual has slipped up, review and adapt the quit plan and encourage a new commitment to quitting.

The 5 As will help you determine a person's willingness to quit tobacco. The first step is to ask if a young person uses tobacco. For example, a school nurses could ask all students who visit her office about their tobacco use or she could focus on asking students who present with coughs, respiratory illness, and those who smell of tobacco. If they confirm that they use tobacco, the next step is to advise them to quit and assess their willingness to make a quit attempt. If a young person is unwilling to quit, the nurse should utilize motivational interviewing techniques to increase the likelihood that the young person will make a quit attempt in the future. If the young person is willing to quit, the nurse should assist him or her in making the quit attempt by helping with setting a quit date and completing a quit plan. The final step is to arrange for follow-up with that young person to provide support, encouragement, and accountability during the quit attempt.



One definition of motivational interviewing (MI) is: a directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence.

A person's motivation to change a behavior, such as quitting tobacco, is always fluctuating. MI helps people explore and resolve their uncertainties about changing a behavior. When thinking about trying to quit tobacco, a young person will experience many moments of doubt. **However, MI can reduce a person's resistance to quitting tobacco by increasing awareness that tobacco use is a problem, strengthening motivation to quit and increasing confidence in one's ability to quit.** MI avoids an aggressive or confrontational approach and instead steers people towards choosing to change their behavior and enhances their self-confidence to do so.2 Practicing MI with students who are currently uninterested or unwilling to make a quit attempt is critical to increasing the likelihood that they will make a quit attempt in the future.

The goal of MI is to help young people realize that they want to quit and to help them do so.

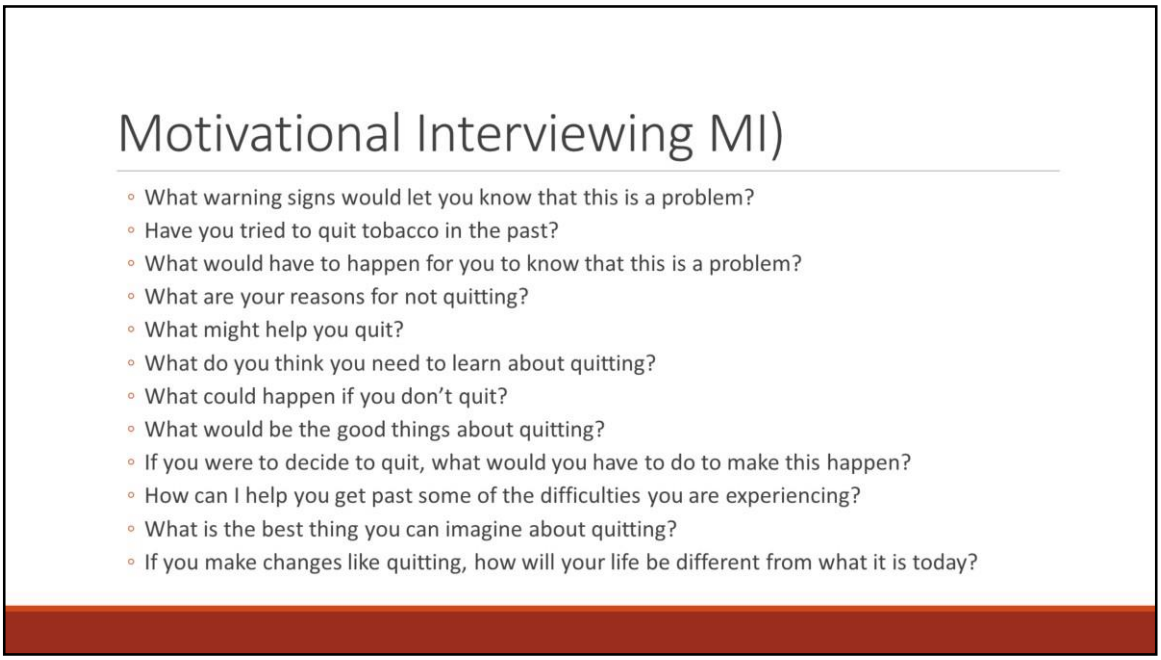
The key characteristics needed to be effective at MI are:

- Active listening

- Understanding
- Demonstrating empathy
- Knowledgeable
- Non-Judgmental

MI techniques include:

- Ask open-ended questions
- Try to understand the student's frame of reference
- Express acceptance and affirmation
- Elicit and selectively reinforce the student's own statements related to behavior change
- Monitor the student's degree of readiness to change
- Affirm the student's freedom of choice and self-direction



Examples of MI questions that you could ask a young person who is uninterested or unwilling to quit tobacco in an effort to reduce ambivalence about quitting include:

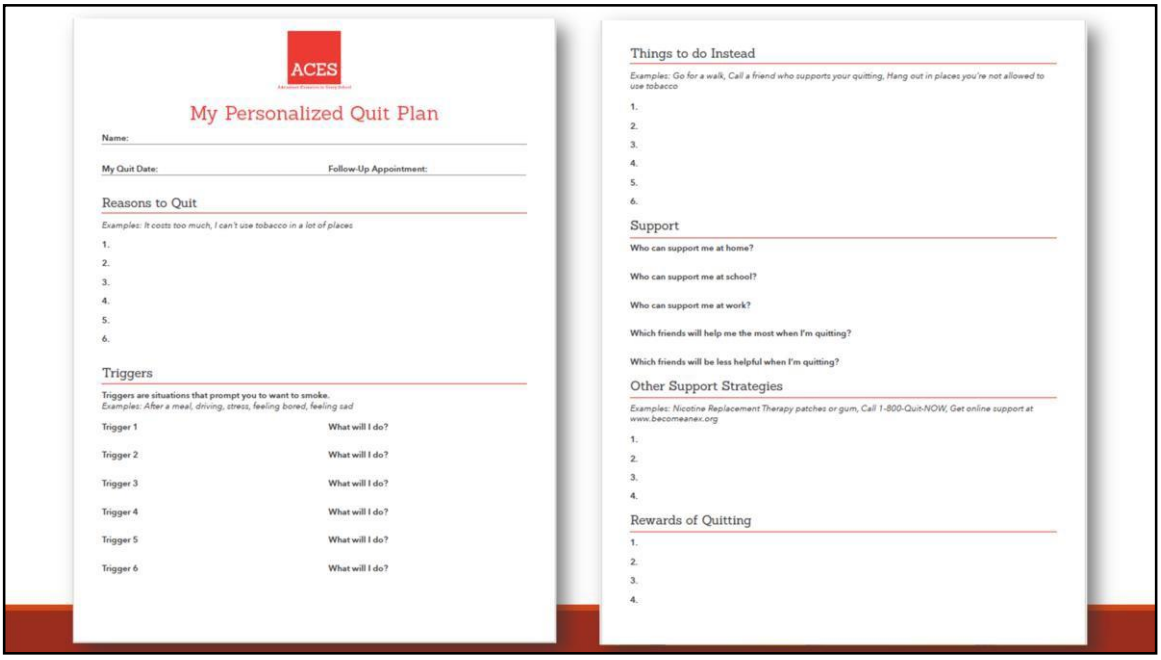
- Have you tried to quit tobacco in the past?
- What might help you quit?
- What would be the good things about quitting?
- If you were to decide to quit, what would you have to do to make this happen?
- How can I help you get past some of the

  difficulties you are experiencing?

Developing a Quit Plan

An evidence-based quit plan template and a follow-up form for adolescent tobacco cessation interventions were developed for this toolkit. The quit plan template covers reasons for quitting, triggers, coping strategies, support and the rewards of quitting. **You can increase a young person's chances of successfully quitting by helping him or her develop a quit plan using the template.**

These tools are easy to use for both cessation providers (aka "quit coaches") and adolescents and are variable in the amount of time required to complete. An initial cessation intervention meeting, including using the 5As and completing the quit plan template, could take 15 to 30 minutes, depending on the amount of time available to provide the service.



ACES

My Personalized Quit Plan

Name:

My Quit Date: Follow-Up Appointment:

Reasons to Quit

Examples: It costs too much, I can't use tobacco in a lot of places

1.
2.
3.
4.
5.
6.

Triggers

Triggers are situations that prompt you to want to smoke.
Examples: After a meal, driving, stress, feeling bored, feeling sad

Trigger 1 What will I do?

Trigger 2 What will I do?

Trigger 3 What will I do?

Trigger 4 What will I do?

Trigger 5 What will I do?

Trigger 6 What will I do?

Things to do Instead

Examples: Go for a walk, Call a friend who supports your quitting, Hang out in places you're not allowed to use tobacco

1.
2.
3.
4.
5.
6.

Support

Who can support me at home?

Who can support me at school?

Who can support me at work?

Which friends will help me the most when I'm quitting?

Which friends will be less helpful when I'm quitting?

Other Support Strategies

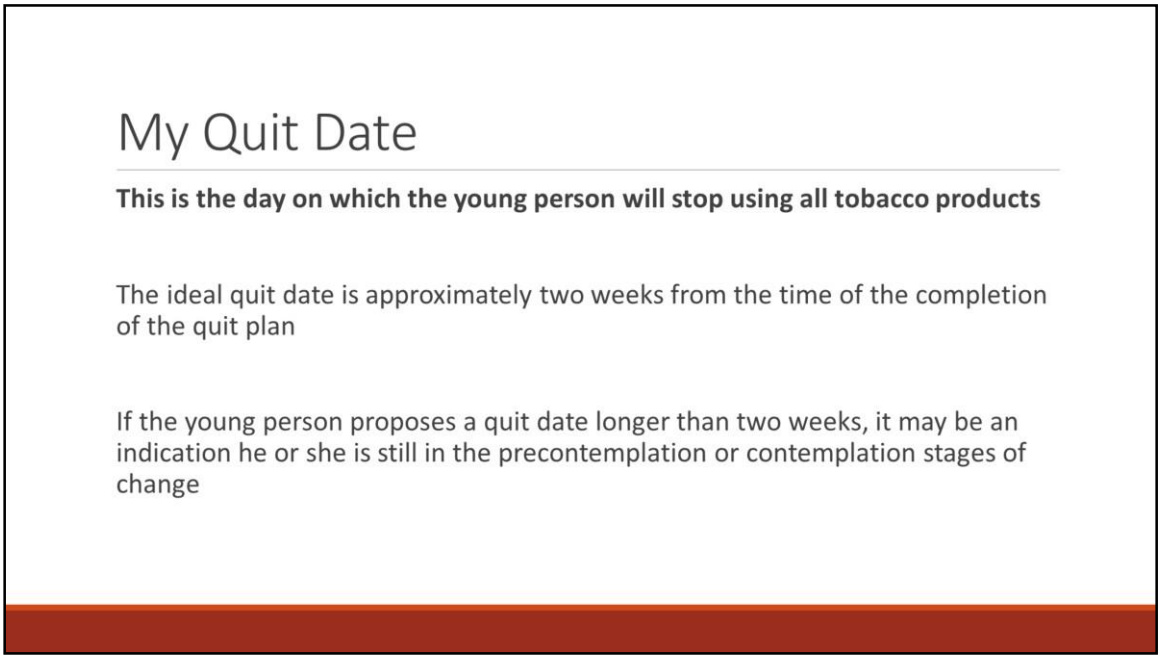
Examples: Nicotine Replacement Therapy patches or gum, Call 1-800-Quit-NOW, Get online support at www.becomeanex.org

1.
2.
3.
4.

Rewards of Quitting

1.
2.
3.
4.

This quit plan was designed to be completed by an adolescent with the guidance and support of an adult, such as a school nurse or other school professional, who will serve as the "quit coach." **The quit coach should guide the young person through its completion, section-by-section, asking open-ended questions and stimulating conversation along the way.** The quit coach can ask the young person the questions on the quit plan and write down his or her responses, or give the quit plan directly to the young person to fill out. However, the quit coach should be involved in the development of the plan by engaging the young person in conversation about the quit plan and not simply hand it out like a homework assignment. Once completed, the quit coach and young person should both keep a copy of the quit plan.

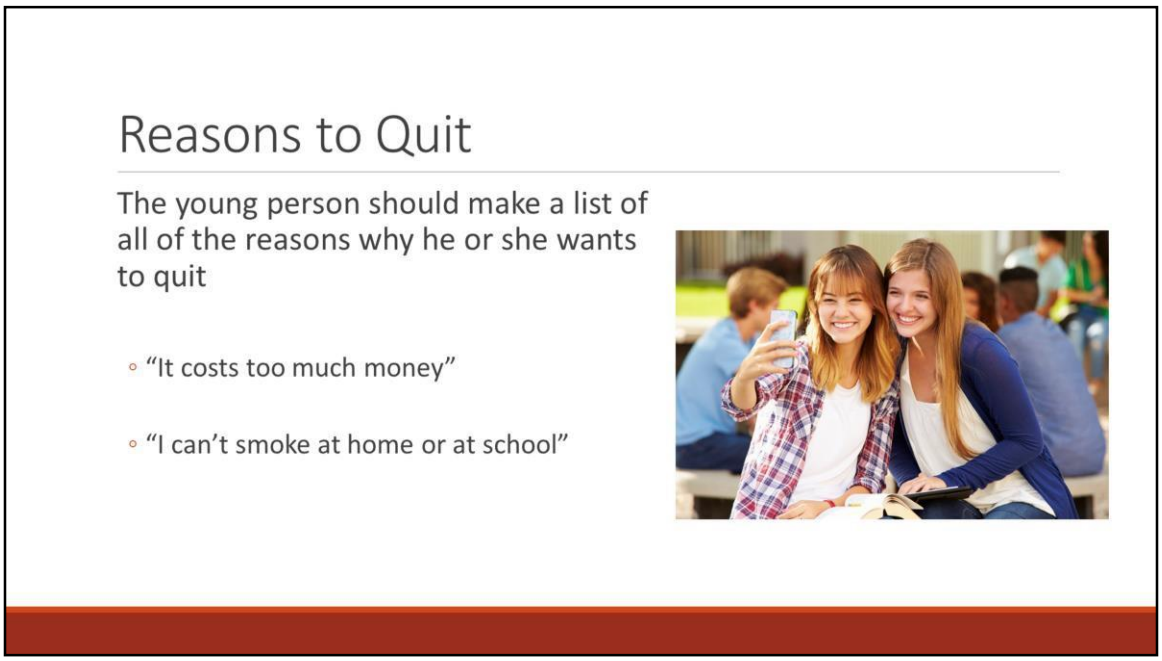


The first section on the quit plan is the Quit Date. This is the day on which the young person will stop using all tobacco products

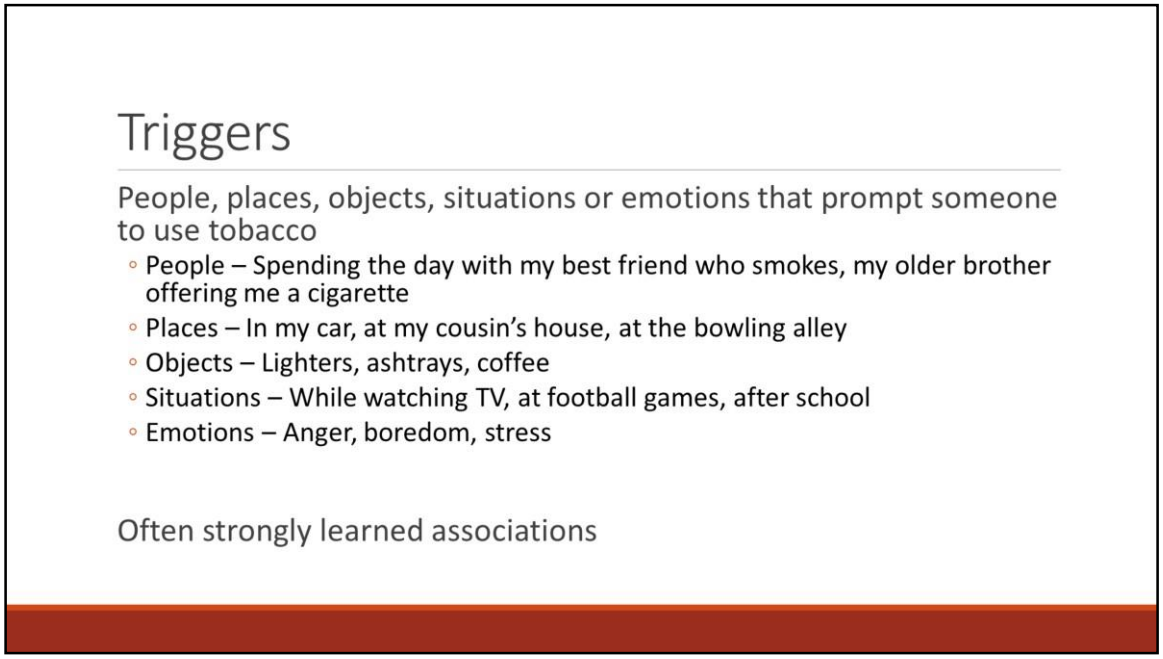
The ideal quit date is approximately two weeks from the time of the completion of the quit plan.

This Provides time for the young person to start to put the quit plan into place, practice coping skills, have support system in place, and cut down on tobacco use

If the young person proposes a quit date longer than two weeks, it may be an indication he or she is not ready to quit now and Motivational interviewing techniques should be employed to reduce the young person's ambivalence about quitting

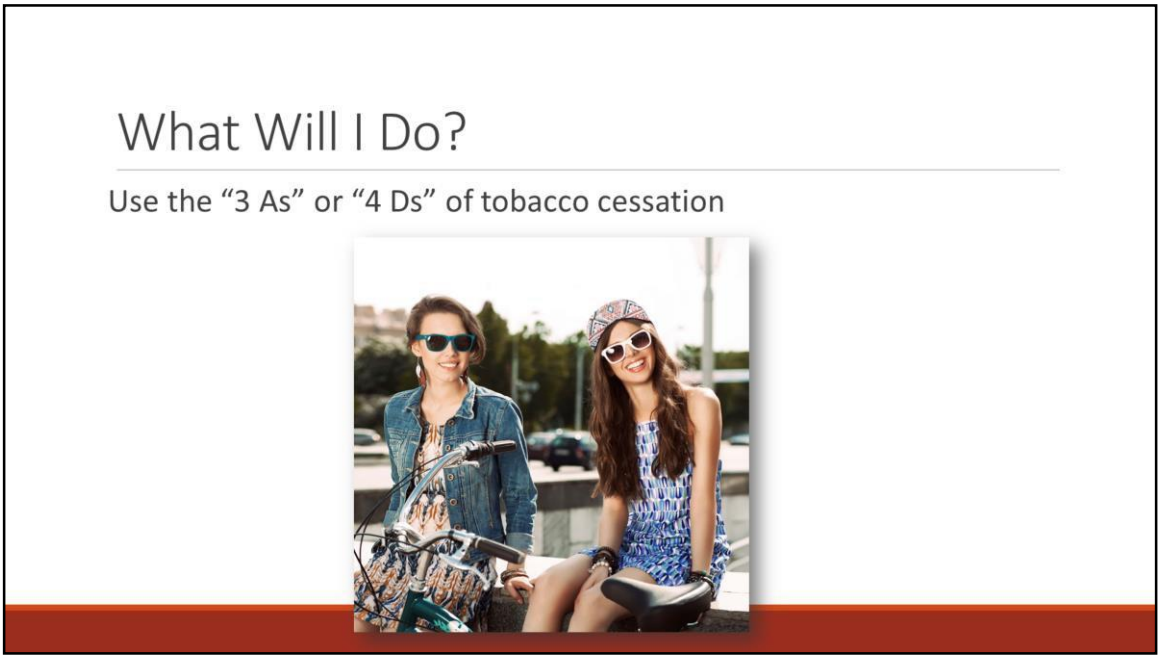


In this section of the quit plan, the young person should make a list of all of the reasons why he or she wants to quit. Examples might be, "it costs too much money" or "I can't smoke at home or at school." Encourage the young person to make a long list. It may help to have the young person identify both short-term goals (e.g., going to college, getting a job) and long-term goals (e.g., being a parent) and imagine the impact that tobacco use would have on achieving those goals.

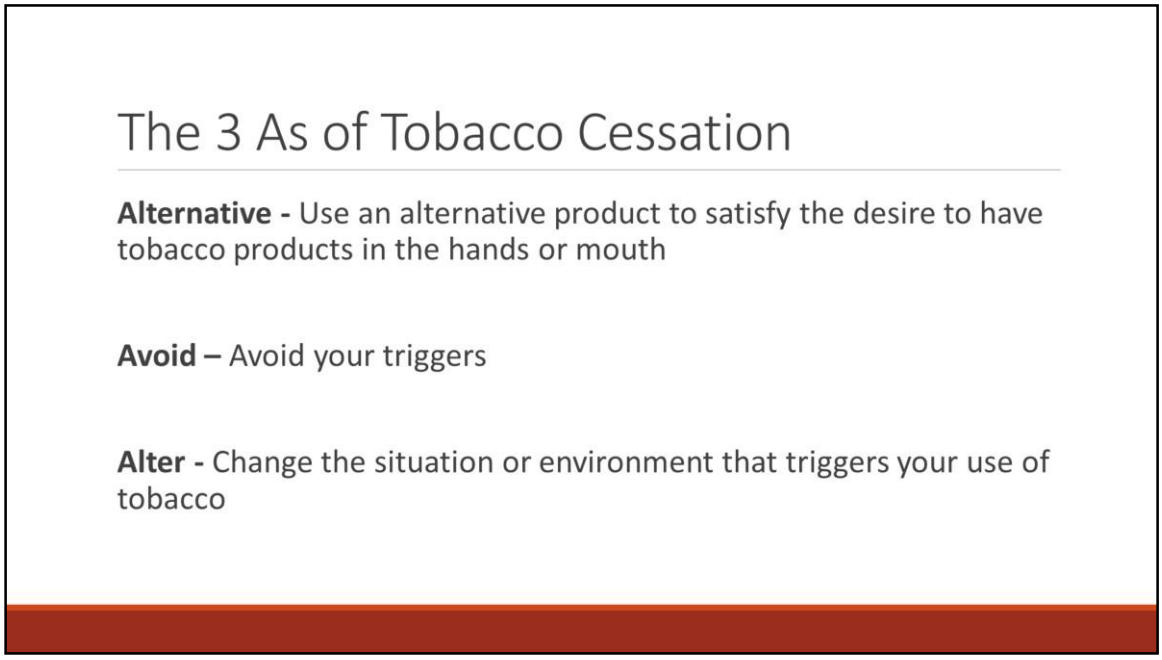


Triggers are people, places, objects, situations or emotions that prompt someone to use tobacco. Triggers are often strongly learned associations. Examples might be: a friend who smokes, getting in my car, drinking coffee, at football games, or stress.

Start by explaining what triggers are. If the young person has trouble identifying triggers, ask him or her to walk you through a typical day, identifying the times when he or she uses tobacco.



After the triggers are identified, complete the “What will I do?” column with a list of healthy coping strategies that are alternatives to tobacco use. Coping strategies often fall into one of the “3 As” or “4 Ds” of tobacco cessation.



The first A is Alternative - Use an alternative product to satisfy the desire to have tobacco products in the hands or mouth

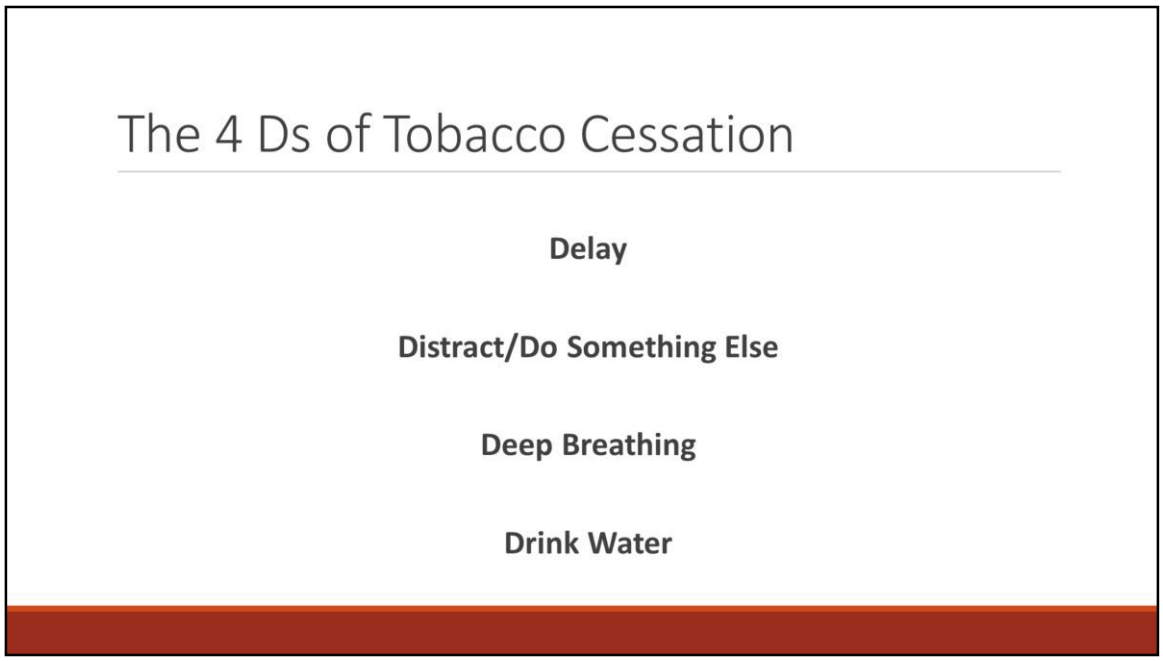
Chew candy, gum, mints

The second A is Avoid – Avoid your triggers

Take your work breaks inside instead of going out back with the smokers Avoid spending a lot of time in places that allow smoking

The third A is Alter - Change the situation or environment that triggers your use of tobacco

Pay for your gas at the pump instead of going inside convenience stores Spend more time with your friends and family members who do not smoke



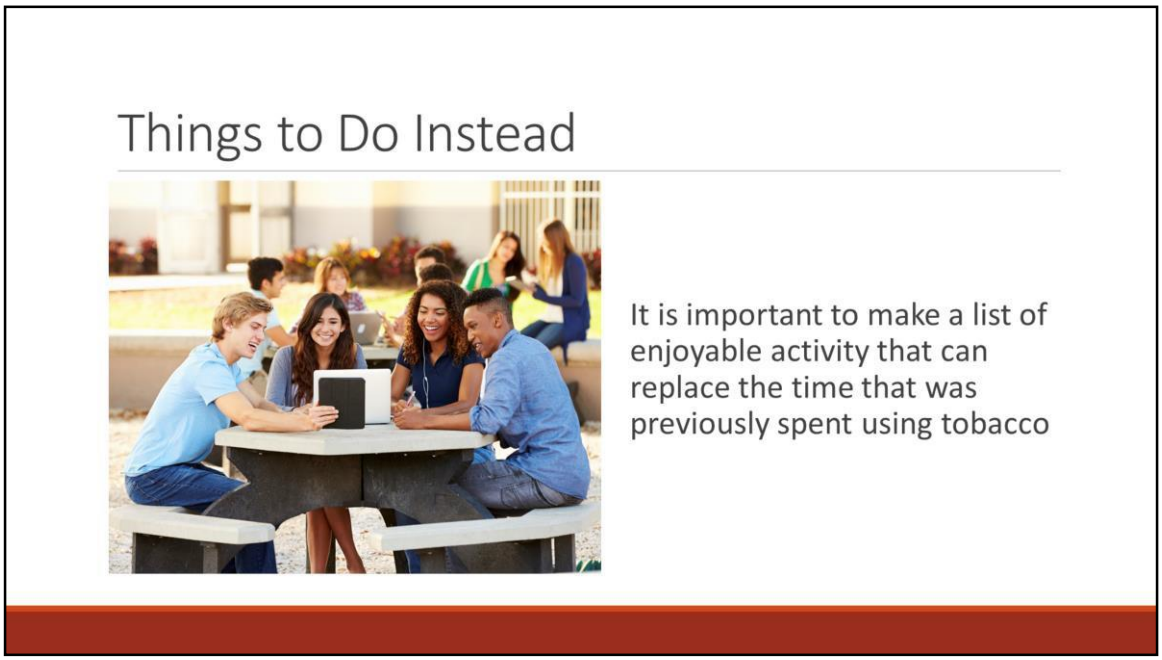
Similarly, the 4Ds of tobacco cessation provide coping strategies.

Delay –By lengthening the amount of time that passes between a craving and tobacco use, you strengthen resistance to cravings and build confidence in your ability to quit. Try to increase the length of time between cravings and tobacco use until you are able to completely avoid tobacco use

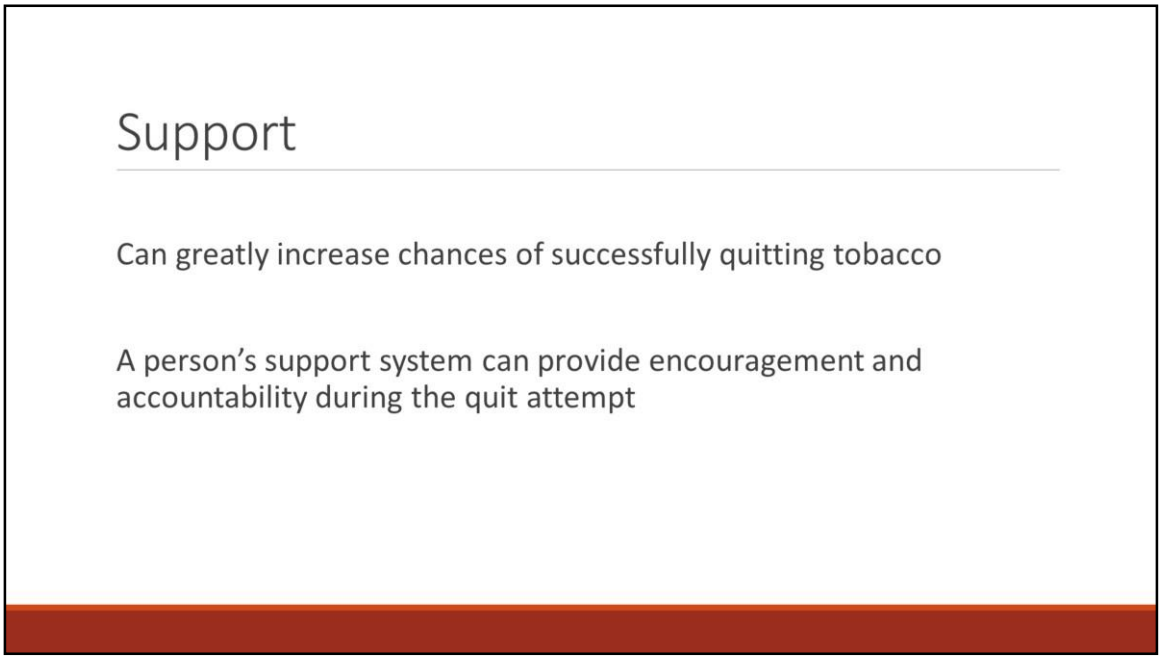
Distract/Do Something Else – Distracting yourself allows time for cravings to pass. Staying busy and engaged in hobbies, sports and other activities is an important part of a successful quit attempt

Deep Breathing – Triggers such as stress, sadness and anger, can often be managed by deep breathing. Taking several deep breaths can also help alleviate cravings and the symptoms of nicotine withdrawal

Drink Water – Similar to deep breathing, drinking water can alleviate cravings and the symptoms of nicotine withdrawal



The "Things to Do Instead" section of the quit plan is used to list hobbies and activities that can be done instead of using tobacco. Examples might include: dancing, playing soccer, practicing piano or reading. It is important to make a list of enjoyable activities that can replace the time that was previously spent using tobacco.



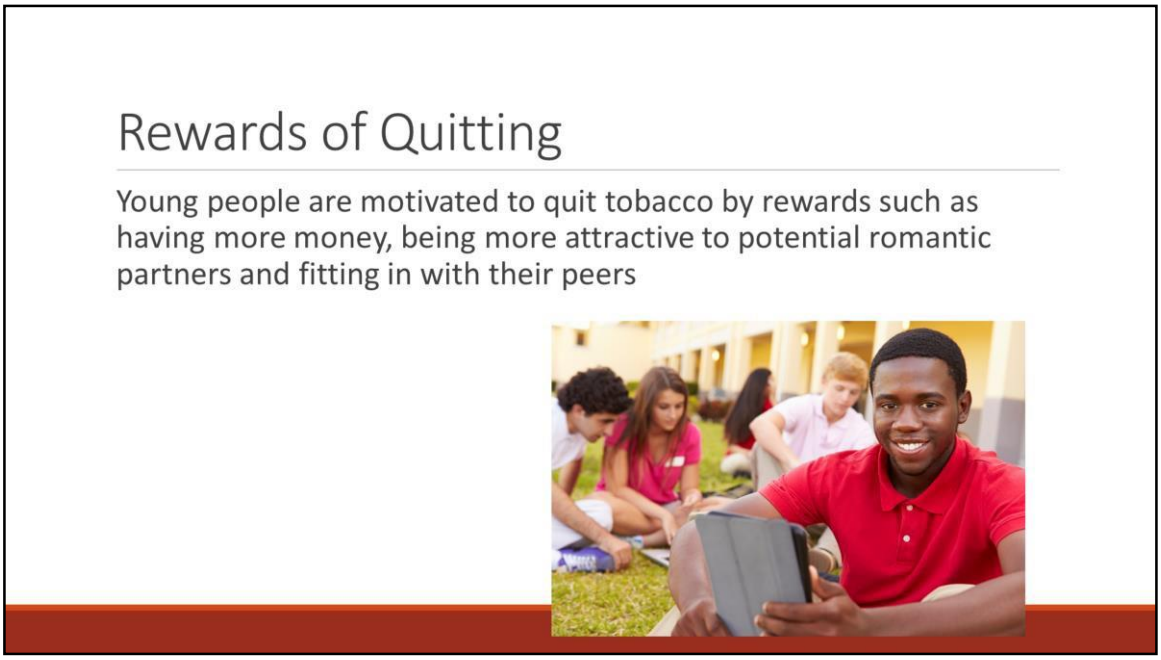
Support from friends, family and a quit coach, can greatly increase a person's chances of successfully quitting tobacco. It is important to identify specific individuals who will support one's quit attempt at school, at home, and at work. **A person's support system can provide encouragement and accountability during the quit attempt**

Other Support Strategies

Examples:

- Use of online, social media and text messaging programs
- Self-help materials and worksheets
- Use of a nicotine replacement therapy product

Other support strategies might include the use of online, social media and text messaging programs, self-help materials and worksheets or use of a nicotine replacement therapy product



Then there is the "Rewards of Quitting" section. Research finds that young people are motivated to quit tobacco by rewards such as having more money, being more attractive to potential romantic partners and fitting in with their peers. Efforts to promote cessation among young people are most successful when they focus on these types of rewards, rather than long-term health consequences such as emphysema and cancer.

Follow Up Appointment

Before the young person leaves, follow-up should be scheduled

During the follow-up appointment:

- **The follow-up form should be completed**
- **Successes should be acknowledged**
- **Setbacks should be reviewed**

The quit plan may need to be adapted during follow-up and additional appointments can be scheduled

Before the young person leaves, follow-up should be scheduled. There is a place at the top of the quit plan to list a date for the young person to come back for a follow up meeting with you.

The more times you meet with the young person, the higher his or her chances are of successfully quitting

The follow up could be scheduled for as little as a few days from the initial appointment, but should be no longer than two weeks from the initial meeting

During the follow-up appointment, the follow-up form should be completed, successes should be acknowledged and setbacks should be reviewed.

During the follow-up appointment: The follow-up form should be completed Successes should be acknowledged Setbacks should be reviewed

The quit plan may need to be adapted during the follow-up appointment and additional follow-up appointments can be scheduled.

Resources

The third and final section of the toolkit covers additional resources to help young people quit tobacco.

Self-Help Materials

Examples:

- Smokefree Teen (website)
- Truth (website)
- The Real Cost (website)
- SmokefreeTXT (text messages)
- QuitSTART (mobile app)

In-between visits with the quit coach, adolescents should practice the coping strategies identified in their quit plans and take advantage of the numerous self-help materials available to them. **Depending on the interests and needs of the young person you are helping, work together to choose a few of these self-help resources for the young person to use in-between your appointments.**

Who Can Help?

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There are professionals in Missouri who can assist you in using this toolkit and providing tobacco cessation services. Please reach out if you have questions or to request an in-person training.

Thank you for participating in the ACES tutorial! You will now receive a follow-up questionnaire. Please complete this questionnaire in order to receive a printed copy of the full ACES toolkit and for a chance to win one of 10 $100 gift cards.

VITA

Jenna Jordan Wintemberg was born October 5, 1988 in West Plains, Missouri. She earned a Bachelor of Arts in Psychology (2010) and a Master of Public Health (2012) from the University of Missouri. In May of 2017 she received her Doctorate of Philosophy degree in Health Education and Promotion and a graduate minor in College Teaching from the Department of Education, School and Counseling Psychology at the University of Missouri. In addition, she is a Certified Health Education Specialist and a Certified Tobacco Treatment Specialist.

Wintemberg is an advocate for tobacco control policies and serves as Chair of Tobacco Free Missouri and Advisor to the Tobacco Free Missouri Youth group. Wintemberg participated in a competitive fellowship with the Legacy Foundation (2012-2013), now known as the Truth Initiative. She has published her research on tobacco use and secondhand smoke exposure among LGBTQ Missourians and presented at numerous state and national conferences.

Wintemberg has been recognized as a Mizzou 39 honoree (2010) and as a Rollin's Society (2014) and Omicron Delta Kappa (2017) inductee for her service efforts. In 2015 she received the American Public Health Association's Alcohol, Tobacco and Other Drugs (ATOD) section College-Based Leadership Award.

She resides in Columbia, Missouri with her husband, Derek. She is currently employed as an Instructor in the Department of Health Sciences and as the Distance Education Coordinator for the Master of Public Health Program at the University of Missouri.