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Youth Tobacco Cessation

Running Head: YOUTH TOBACCO CESSATION IN GREATER SUDBURY

An Examination of
Youth Tobacco Cessation Needs, Demand and Services
Within the City of Greater Sudbury
David R. Groulx
Lakehead University

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ABSTRACT

Tobacco use contributes to a significant amount of morbidity and mortality. Youth are interested in quitting smoking yet most often do not choose assisted cessation approaches which have been shown effective in the literature (CDC, 2006). Youth within the City of Greater Sudbury (CGS) have indicated a desire to quit smoking however anecdotal evidence has pointed to the lack of services in the area (Groulx, 2005; Sudbury & District Health Unit [SDHU], 2004a). To better understand local interest and demand for cessation services, analysis of a subset of data from the School Health Action, Planning and Evaluation System (SHAPES) Ontario (tobacco module) survey was completed. Data were derived from one secondary school in the CGS yielding 589 completed questionnaires. Analysis included frequencies, cross tabulations, and logistic regressions and focused on identification of local youths preferred cessation methods, factors most likely to impact youth success in smoking cessation, and factors influencing the students' preference to use assisted tobacco cessation methods/aids. Similar to previous studies which analyzed the provincial SHAPES dataset, most youth preferred to quit on their own. However, unlike previous literature, interest in, and factors contributing to interest in some assisted cessation methods was demonstrated. Analysis into the forces impacting the demand and provision of cessation services at the local level was also conducted. Despite the great capacity at the local level, environmental factors and provincial forces impacting the demand for cessation are evident as is the lack of youth specific cessation services. Recommendations for public health are proposed and are aimed at increasing demand for, and provision of evidence based cessation support for youth.

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STATEMENT OF PROBLEM/PURPOSE

Tobacco use continues to contribute to a significant amount of morbidity and mortality within Canada and leads to substantial social and economic costs to our society (Groupe d'Analyse Inc., 2004). Cigarette smoking continues to be the number one preventable cause of death in Canada and accounted for more than 47000 deaths in 1998, with over 10000 of these deaths occurring in Ontario alone (Makomaski-illing, & Kaiserman, 2004). Tobacco use has a particularly devastating impact within the Sudbury & District Health Unit (SDHU) area of which the City of Greater Sudbury (CGS) is situated. This is evidenced by the higher rates of death from ischemic heart disease, cancer, high blood pressure, chronic obstructive pulmonary disease and asthma when compared to the province (SDHU, 2008). Unlike adults who smoke, adolescent smokers also face the risk of developing illness and disease as a result of tobacco use.

Tobacco use in adolescence is also associated with the use of other drugs (Centre for Addiction and Mental Health [CAMH], 2007a) and mental health issues (Massey et al., 2003). Adolescent tobacco users are eight times more likely to use marijuana and three times more likely to use alcohol than those who do not use tobacco (Lamkin, Davis, & Kamen, 1998).

Not unlike other drug dependencies, tobacco dependence is a progressive, chronic, relapsing disorder which usually begins in early adolescence (Ontario Medical Association [OMA], 1999). Over 90% of adolescent smokers believe they will quit smoking before they are adults, when in fact only a small proportion successfully quit (Lampkin et al., 1998). Literature identifies that there has been an increase in demand for effective cessation services and supports by both youth and those that work with the

youth (Milton, Maule, Yee, Backinger, Malarcher , & Husten, 2004). This need for cessation services has also been echoed by youth within the CGS who have expressed a desire to quit however it has been anecdotally report that cessation services within the city are lacking (Groulx, 2005; SDHU 2004a). For this reason, interest and demand for cessation services among the local youth of the CGS, as well as the identification of existing components of a local tobacco cessation strategy will be examined.

Prior to this, a literature review summarizing the progression to smoking as well as describing what is known about youths' desire and ability to quit smoking is presented. Additionally, literature demonstrating the impact of various individual and population tobacco control strategies on youths' ability to quit smoking is highlighted. Finally, the literature review gives an overview of external factors impacting demand and provision of local (CGS) cessation services.

Following the literature review, local youths' interest and demand for cessation services is outlined. This is accomplished through the analysis of local data from a subset of the SHAPES Ontario survey, highlighting local youths preferred cessation methods as well as factors that would increase one's desire for use of assisted cessation approaches. Demand for local youth cessation services is then described through a scan of local youth cessation services, local capacity to provide such services, as well as environmental factors supporting youth cessation efforts.

Lastly recommendations for public health policy will be proposed aimed at increasing demand for, and provision of evidence based cessation support for youth.

LITERATURE REVIEW

In order to address the issue of tobacco use cessation amongst youth one must understand the factors involved in becoming a smoker as well as individual factors leading to cessation. Therefore, presented below is a summary of current literature highlighting these factors as well components contained within comprehensive cessation programming. Additionally, factors (outside the CGS) impacting the provision and demand for youth tobacco cessation services with the CGS are noted. Data from systematic reviews of cessation trials, pilot studies, descriptive articles and reports on youth smoking cessation have been summarized. Literature was located through the Cochrane Library, CINAHL, Medline, ProQuest, Ontario Tobacco Research Unit (OTRU), (CDC), Tobacco Control Online, government documents, reports from agencies involved in tobacco control, local health surveillance reports, health care association publications, local media, personal correspondence, and unpublished papers.

Smoking and Youth...Becoming a Smoker

In North America, a large majority of adult smokers initiated smoking prior to reaching the end of their teen years (Sussman, 2002). More specifically, among smokers aged 25 and over in Canada, 90% had their first cigarette by the end of their teens (Health Canada, 2003).

It is noted in the literature that the progression of smoking possess four common stages (Gervais, O'Loughlin, Meshfedjian, Bancej, & Tremblay, 2006; Mowery, Farrelly, Haviland, Gable, & Wells, 2004). The first stage, preparation, is the time that the individual prepares to become a smoker, such that their interest in smoking is established. The second stage involves the actual initiation or "trying" of the tobacco

product. Balch (1998) explains that in his research, the trial experience was usually suggested by an older relative or a peer who willingly offered the non-smoker a cigarette. The third stage is characterized by the progression of the individual's smoking patterns from irregular to regular utilization. Mermelstein (2003) described youth smoking patterns as less predictable and more opportunistic than those of adults. He pointed out that adolescents are more likely to smoke more irregularly and to smoke less per day than adults and that these patterns may become reinforcing. Furthermore these smoking patterns make it harder for the adolescent to anticipate, plan for alternatives and to change the behaviour. The fourth and final stage is where the individual's utilization of tobacco is maintained by nicotine dependence and addiction. It has been widely accepted that this point of dependence is measured and reached at "lifetime consumption of 100 cigarettes". In fact numerous studies use this as inclusion criteria when testing cessation interventions among participants (Gervais, et al., 2006; Sun, Unger, & Sussman, 2005). Research conducted by Gervais et al. (2006) however, described the course of onset of cigarette use among 1300 Canadian students, revealing that students reported mental and physical addiction as well displayed withdrawal symptoms before lifetime consumption of 100 cigarettes. Of those students who reported symptoms of nicotine dependence, 70% reported symptoms developing before daily smoking. The rate at which an adolescent progresses through the above stages varies in the literature. Much of the literature reviewed indicated that the general progression from initiation (first puff) to regular smoking and/or the maintenance stage occurs over a period of one or more years (Balch, 1998; Gervais et al., 2006; Mowery, et al., 2004). Furthermore, Moolchan, Aung, and Henningfield (2003) identified that adolescents achieve dependence with lower smoking

rates than adults. It has also been identified that one's gender may also play a role in the rate at which the adolescent progresses through the stages. Gervais et al. (2006) identified that females reported more symptoms of nicotine dependence in all sub-groups of smokers studied. Furthermore symptoms indicating a loss of autonomy over smoking occur more quickly in females (Moolchan et al., 2003).

In the literature, there are many factors that have been identified as contributing factors, and/or predictors of smoking in adolescents. Social forces within and beyond adolescents' immediate social circle contribute to adolescent smoking such that smoking offers adolescent smokers a method of meeting and interacting with others (Myers, & Kelly, 2006). Other influencers to adolescent smoking include alcohol consumption, the smoking conduct of parents and siblings, parental norms, expectations, and communication about smoking, and the presence (or absence) of young people smoking in a variety of settings (Amos, Wiltshire, Haw, & Mc Neill, 2006; Eisenburg & Forster, 2003; Schwartz & O'Donnell, 1996). These social norms send a powerful message about appropriate and expected behaviour for adolescents. Albers, Siegal, Cheng, Biener, and Rigotti (2004) identified that both perceived smoking prevalence and the perceived social acceptability of smoking have been shown to be strong predictors of adolescent smoking behaviour. Perhaps the most common variable used to operationalize social norms of smoking within evidence based practice, is the perceived prevalence of adolescent smoking which tends to be overestimated, particularly by individuals who smoke (Eisenburg & Forster, 2003).

Other characteristics that may play a role in the adoption of smoking include one's geographic location, gender, culture and economic status. Youth for example (in

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particular females) who live in the northern rural areas of Canada start smoking earlier, have higher rates of smoking and have a higher risk of developing illness when compared to Canadian averages and/or their non-rural counterparts (Horn, Dino, Kalsekar & Fernandes, 2004; Mitura, & Bollman, 2004; Statistics Canada, 2002). Research has indicated that Francophone, regardless of age group, have higher smoking rates than non-Francophone in Ontario. The Second Report on the Health of Francophone's in Ontario (2005) reported that daily smoking is higher in the francophone population, particularly in the Northeast, than in other sociolinguistic groups (Public Health Research Education and Development & Institut Franco-ontarien, 2005). Furthermore, off-reserve aboriginal populations have a higher prevalence of smoking than the non-aboriginal population (Statistics Canada, 2002).

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Youths Desire and Ability to Quit Smoking

Tobacco cessation is not only desired and sought after in adulthood it is in fact a goal that many youth strive to achieve. Within the current literature it is understood that many youth express interest in quitting smoking and do make quit attempts. Amos et al. (2006) identified youth show considerable interest in quitting similar to that in an older person. They point out that from their structured survey, close to 75% of youth were interested in quitting in the future. They further point out that the percentage of those interested in quitting is similar to the number of youth indicating that they have made a quit attempt. Zhu, Sun, Billings, Choi, and Malarcher (1999) however indicated in their

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paper that 85% of adolescent smokers were seriously thinking about quitting and 55% actually attempted to quit.

Despite the deleterious chronic health risks and impacts that smoking has on an individual, early cessation may significantly reduce illness and/or premature death resulting from smoking. The health risks are somewhat understood by adolescent smokers as their reasons for choosing to quit reflected their concerns of illness and suffering. There are other reasons that youth want to quit including death of a loved one, request from partner, cost, recommendation from health care provider, pregnancy and having reached some finite limit or having “enough” of smoking (Amos et al., 2006; Balch, 1998; Mermelstein, 2003).

Whatever reasons adolescents choose to quit, their motivation to, and self-efficacy in their ability to quit play a large role in their cessation efforts. Moolchan et al. (2003) point out that motivation represents a crucial factor in engaging youth in smoking cessation. Motivation can be described as a shifting state of desire to change (Myers & Kelly, 2006). Zhu et al. (1999) explained that light smokers may feel they have less reason to quit compared to the heavy smokers. This lower motivation leads to a lower tobacco cessation attempt rate in lighter smokers. In addition, adolescents' stages of readiness of cessation may be more fleeting compared to adults and intentions of youth to quit can be quite inconsistent and vary from day to day. Few in fact are in action stage of cessation readiness (Amos et al., 2006; Moolchan et al. 2003). This view that quitting is something that happens in the future may be in part due to the meanings that adolescents attach to their smoking and their overall understanding of their behaviour. They acknowledge the importance of quitting eventually but do not see this as serious or urgent

(Balch, 1998). This may be in part due to an adolescent's likelihood not to have acquired subjectively noticeable negative consequences from smoking and tobacco related illness (Myers & Kelly, 2006). Backinger et al. (2003) have identified that youth who are occasional smokers as well as those who do not purchase their own cigarettes may classify themselves as non-smokers. A cross sectional study by Leatherdale & McDonald (2007) analyzed data from the School Health Action, Planning and Evaluation System (SHAPES) Tobacco Module. This module comprised of a machine readable questionnaire designed to measure tobacco use behaviour and potential determinants of tobacco use. This survey was completed by over 22000 students from 29 high schools across the province of Ontario, Canada (Leatherdale, 2006). They noted that in their study three quarters of the students who were categorized as occasional smokers did not consider themselves as smokers. This lack of self-identity as a "smoker" may lead the teen to dismiss cessation messages as they would not feel that the messages apply to themselves. This would therefore make it less likely that the individual will see the need for behaviour change to tobacco cessation, in turn affecting their motivation to quit and likely success of such attempts (Amos et al., 2006; Mermelstein, 2003).

Self-efficacy is a self-judgment of one's ability to perform a task. It affects some of the factors that predict motivation (Wang, 2001). Self-efficacy has been identified as a predictive factor in future quit attempts as well as the type of cessation methods chosen by women (Zhu et al., 1999). For instance, Hublet, Maes, and Csincsak (2002) identified that women with high self-efficacy are less likely to participate in cessation programs in comparison with those women with low self-efficacy to quit smoking. The literature describing the proportion of youth who have positive self-efficacy relating to ability to

quit smoking varies widely. Mermelstein (2003) for example described that adolescent smokers frequently report difficulty quitting or a lack of confidence in their ability to do so. He further described that one study found that only a minority (43%) of a sample of adolescent smokers felt confident that they would ever quit smoking. Subsequent to reporting the findings from the literature, he identified that the data from the Teenage Attitudes and Practices Survey also point out that of the adolescent smokers surveyed, almost three-quarters indicated that they felt they could stop if they wanted to. This variation may be due to the factors that affect self-efficacy including ones personal experience with and observation of success and failure, verbal persuasion (dissuasion) and ones physiological state (e.g. nervousness or anxiety) (Wang, 2001). In addition, analysis of SHAPES data noted above, revealed that one's pattern/amount smoked impacts ones self-efficacy relating to tobacco cessation such that occasional smokers, as they do not consider themselves addicted to smoking, falsely believe that it would be easy for them to quit smoking (Leatherdale, 2006).

Motivation and self-efficacy are not the only factors influencing or predicting future tobacco cessation efforts for adolescent smokers. The numbers of past quit attempts as well as the length of past quit attempts are predictors of tobacco cessation. For instance the more past quit attempts one has, the greater the likelihood that the individual will quit smoking. In addition, those who make quit attempts that last longer than two weeks are much more likely to succeed than those who have not sustained a quit attempt for that period of time (Zhu et al., 1999). Other characteristics which are associated with an increased likelihood of youth making a quit attempt or quitting smoking include being a younger age, female, White, Asian or Hispanic. In addition, parental factors such as not

approving of smoking and non-smoking parents, less perceived stress, peer influences such as having fewer friends that smoke and having peer support, lifestyle factors such as having health as a value, antitobacco beliefs and feeling relatively hopeful about life, fewer number of cigarettes smoked and less frequency of smoking, a lower level of nicotine dependence and higher intention to quit are also associated with an increased likelihood of youth making a quit attempt or quitting smoking (Mermelstein, 2003; Sanchez del Mazo, 2005; Sussman, 2002). The type of youth cessation interventions also impacts the outcome of youth cessation efforts. Behavioural intervention accompanied with self-help materials has shown to impact on youth cessation rates. Brief counselling from a health care professional can also lead to increased quit rates (Backinger et al., 2003). Schools as well as other settings including clinic-based settings, and home based settings have potential utility. Balch (1998) reported factors that do not necessarily lead to cessation of smoking but instead have resulted in smokers reducing their consumption. These included being around certain individuals such as younger children who do not smoke, other friends who do not like or approve of smoking, and parents. In addition, it was identified that smokers also avoid smoking where they perceive a high risk of punishment, particularly in school.

Understanding the accelerated rate at which youth become dependent on tobacco products and that there are interventions that can assist youth in cessation, it is clear that early intervention is important (Milton et al., 2004). However, recruitment and follow up of youth smokers into formalized treatment and intervention regimes poses a challenge in treating youth tobacco addiction. This may be due to the fact that the opinions of young people on the process of quitting; their desired methods for quitting and their experiences

during the quitting process have not been taken into consideration in the design of adolescent smoking cessation programs (Hublet et al., 2002). Panday, Reddy & Swart (2003) pointed out that youth cessation interventions based on adult determinants of smoking would be misdirected as the determinants of smoking behaviour for the two groups are often different. Youth tobacco cessation strategies need to be available to youth (and youth need to be made aware of such services), be targeted to those who are most likely to use them, appropriate to their stage of development, perceived that these services are helpful, and reveal a variety of flexible options (Mermelstein, 2003; Leatherdale, 2006).

A current report from the Centers for Disease Control and Prevention CDC] (2006) revealed that a majority of adolescents between the ages of 16 and 24 years who had tried to quit were more likely to use unassisted quitting methods than assisted quitting methods. The most commonly used unassisted strategy, decreasing the number of cigarettes smoked, was tried by 88.3% of young smokers. Of particular relevance is that none of the unassisted methods are recommended by the Public Health Service clinical guidelines for treatment of tobacco use and dependence (CDC, 2006). SHAPES analysis revealed that most youth want to quit on their own or with help from a friend. In fact, youth had little interest in using most types of assisted approaches including the websites and self-help books. This desire to quit on their own may be due to a lack of knowledge regarding the benefits of using cessation aids (Leatherdale & McDonald, 2007) or the lack of availability/accessibility of other cessation methods. Furthermore, it may be that youth like their adult counterparts, are unfamiliar with smoking cessation aids (Leatherdale & McDonald, 2005). If one is to increase a youth smokers' desire to

participate in cessation services, they need to be aware of such services (Leatherdale, 2006). In addition, SHAPES analysis revealed that many youth smokers were not interested in participating in school based cessation programs and interest in such was further reduced if they were self-assured they could quit on their own. Despite this, youth smokers were more likely to want to participate in school based cessation programs when they were aware of such services and if they had previous quit attempts over the past year (Leatherdale, 2006; Leatherdale & McDonald, 2007). Mermelstein (2003) has identified that in one study, only 3% of adolescents mention trying a recognized program or method to help them quit supporting the identification of youth interest in unassisted methods such as weaning or cutting down on the number of cigarettes smoked, switching to lighter brands, as well as “going cold turkey” (Amos et al., 2006; Balch, 1998). Gender differences do exist with respect to the desire or participation in particular cessation interventions. Males, for example, have expressed interest in a computer game to assist them in their quitting efforts. In addition, males are more likely than females to exercise more and to switch to other tobacco products as cessation strategies. Females have expressed more interest than males in utilizing a group cessation component of a smoking intervention. Furthermore, females are more likely to seek help from health care professionals (Balch, 1998; CDC, 2006). Other variables that impact the type of cessation method preferred exist. Hublet et al. (2002) for instance, identified that one’s intention to quit plays a role in their participation in various cessation programming. Their research identified three variables distinguishing between students who requested self-help materials and those who participated in a group program. These variables included anticipation of difficulty in smoking cessation, self-efficacy and students’ intentions to

participate in a respective course of tobacco cessation. Those students anticipating difficulties in smoking cessation would engage in the group course. Those with moderate self-efficacy to smoke less were two times more likely to choose self-help material than those with low self-efficacy. Lastly those students who had intention to participate in the group course were more likely to do so than those with no intention to participate.

Understanding that youth want to quit and that there are means to help them achieve their cessation goals, it is interesting that the prevalence of quitting is lower among teenagers and young adults than the general adult population. Most teenagers would like to quit but few succeed (Milton et al., 2004). Rates for failed quitting attempts among younger smokers are higher (43%) than those for adults (CDC, 2006). Short term quit rates from interventions with youth have been shown to vary considerably. Few studies have been conducted with long term follow up and quit rates vary considerable from 21% to 4% (CDC, 2006; Mermelstein, 2003; Zhu et al., 1999). Finally, rates for relapse into smoking have been reported to be even higher for those youth who use alcohol and other drugs (Myers & Kelly, 2006).

Cessation Strategies

A comprehensive approach to tobacco use cessation includes population based strategies such as the reduction of human exposure to ETS, tobacco price increases and mass media campaigns as well as individual-level interventions. The following will present a review of literature of both population based strategies as well as current individual level youth smoking cessation interventions and treatments and their efficacy with youth smokers.

Individual Level Interventions

Presented below is a summary of literature describing individual level interventions for youth cessation. Curry (2003) describes individual level interventions as those direct treatments that increase tobacco use cessation which include both behavioural counselling and pharmacological treatments. Therefore, for the purposes of this review, the role and impact of health care providers, school based programs, telephone counselling, internet based youth cessation services, and pharmacotherapy on youth cessation will be explored.

Behavioural counselling.

Adolescence is a developmental stage characterized by a series of changes in the physical, cognitive, emotional and social domains. When developing strategies targeted to this audience, one must recognize that many youth may not possess well developed cognitive skills necessary for behaviour change. Understanding this, it is no wonder that behavioural approaches appear to be the cornerstone of antismoking initiatives for children (Jairath, Mitchell, & Filleon, 2003).

Many of the behavioural approaches in cessation (youth and adult) have been based on two primary theoretical constructs, the Trans-theoretical model (TTM) (also known as the stages of change) and Cognitive Behavioural Approach (CBA).

The TTM has gained wide acceptance in treating smoking addiction in adults. Evidence exists that demonstrates that adult smokers and adolescent smokers are similar in trans-theoretical measures and exhibit similar behaviour at different stages of the smoking cessation process (Pallonen, 1998). Mermelstein (2003) noted that research has

examined stages of the cessation continuum laid out by the TTM model of change in a sample of adolescents. This research had identified six cessation stages: (1) recent acquisition; (2) precontemplation (smokers not thinking about quitting); (3) contemplation (smokers thinking about quitting, but who have never had a serious quit attempt before); (4) preparation (smokers thinking about quitting and who have had at least one serious quit attempt); (5) action (former smokers who had quit smoking); and (6) maintenance (former smokers who had been abstinent more than six months). Moreover the distribution of stages is fairly heterogeneous (Granda-Orive, et al., 2004) and “have been shown to predict smoking outcomes after brief interviewing among adolescents” (Moolchan et al., 2003, p. 225).

A majority of youth are in either the precontemplation or contemplation stages of cessation. In addition, at any given time, about 15-19% of adolescents smokers are seriously considering quitting in the near future, providing a good target for intervention. Furthermore, an additional 30% may become prepared for future intervention efforts (Mermelstein, 2003). Pallonen (1998) compared the trans-theoretical measures for adolescent and adult smokers and identified that cessation programs reaching only a small number of teenagers who are prepared to quit, or who are willing to take part, should be replaced by interventions that are designed for smokers in all stages. Similar findings were noted by Granda-Orive et al. (2004) as they explained cessation results are more favourable in those studies where interventions are adapted to the person’s stage of smoking cessation. Such comprehensive programs will have a significantly greater potential impact on the social forces that influence tobacco use than current clinic programs, which attract only a small number of smokers. Previous literature identified,

youth cessation efforts utilizing the TTM have produced quit rates of 15% by the end of the program (Coleman-Wallace, Lee, Montgomery, Blix, & Wang, 1999).

Approaches such as the TTM may be significantly related to the CBA but whether this model offers advantages above the basic techniques of the cognitive-behavioural approaches has not been determined yet (Mermelstein, 2003). McDonald, Colwell et al. (2003) identified that cognitive behavioural principals have been shown to be effective programs and are a promising foundation for treatment of youth tobacco use. Mermelstein (2003) points out the interventions that show the most promise and follow cognitive-behavioural principals of change include such things as self- management training, problem solving and coping skills and specific measures for improving motivation through dealing with withdrawal. Cognitive-behavioural approaches should be delivered in a variety of settings and modalities. Behavioural counselling for instance can range from individual advice and encouragement to quit from one's health care provider, to multi-component behavioural programs delivered face to face in groups (school based programs), or through outreach telephone counselling and quit-lines (Curry, 2003).

Role of health professionals.

Current clinical practice recommendations from the Agency for Health Care Policy and Research and the American Academy of Paediatrics point out the essential role of health care providers as agents in smoking prevention and cessation. (Alfano, Zbidowski, Robinson, Klesges, & Scarinci, 2002). Physicians are in a position to lower adolescent smoking rates for several reasons including the frequency in which the

physician sees the adolescent, physicians as credible sources of medical information and adolescents report their physician's advice is influential in their health practices and would motivate them to try to stop smoking. Yet despite the above, physician screening for smoking during adolescence and counselling for smoking remains very low (Alfano et al., 2002). According to the evidence-base clinical practice guidelines from the Centers for Disease Control and Prevention (2000), brief physician advice can produce cessation proportions from 5 to 10% and achieve a 27% reduction in tobacco use (Sussman, 2002). Mermelstein (2003) noted that brief clinical advice combined with motivational counselling and an interactive computer program at a primary care visit increased abstinent rates with the impact maintaining at two year follow up.

Regardless of the above, serious challenges persist in the impact and provision of physician youth tobacco cessation services. As Moolchan et al. (2003) described:

Office based counselling of smoking adolescents as designs in the office-based interventions often rely on brief advice only and lack relapse prevention components, medications, intensive therapeutic groups and other structured interventions that are available in many research protocols. As such, it may be unrealistic to expect a standard of total immediate cessation from the majority of teenage smokers seen in health practice settings. (p. 226)

Moreover, youth are unfamiliar with the concepts of smoking cessation programs and/or with the tools or methods to support their quit attempts, and therefore are reluctant to seek help or assistance from health care professionals or services to help them quit. Their concerns regarding confidentiality are paramount as their parents are often unaware of their smoking behaviour (Lantz et al., 2000).

School-based programs.

The Cochrane Database of Systematic Reviews reported that overall, smoking cessation programs delivered in a group format are better for helping people stop smoking than self-help and other less intensive interventions (Stead & Lancaster, 2005). For youth, school is the venue most often utilized to deliver group interventions. School-based programs are seen as appropriate venues to host face-to-face cessation programs as one has a 'captive' audience. School-based cessation programs have generally shown to produce significant impacts on short term cessation rates, be of relatively low cost and have been the most popular mode of delivery of cessation programs (Sussman, 2002; Mermelstein, 2003). According to Sussman (2002), classroom-based programs yielded the highest quit rates compared to other treatment modalities at 17% and also yielded the highest rates of reduction (34%) in tobacco use. However, little research has been conducted on the long term cessation rates of those who participated in school-based programs. School-based programs range in implementation from 6 weeks or more. School-based programs are highly interactive, often involve small numbers of youth (generally 5-15), are delivered outside of class hours and are gender specific. Moreover, evidence has demonstrated that as the number of sessions increases greater than nine so to does the quit rates and rates of reduction (Sussman, 2002). Two group based programs that have shown favourable results in assisting youth in their cessation efforts and have been utilized within a classroom setting include the N-O-T program and the Quit 4 Life program.

Evaluation of the (NOT) program in the United States showed favourable results in one study with quit rates reported at 21.7%, and reduction rates at 74.3%, 7 months post baseline (Dino et al., 2001). Moreover, the N-O-T program has been shown to improve quit rates among rural youth as well as urban youth (Horn et al., 2004). The Quit 4 Life Program developed by Health Canada and the Canadian Lung Association has also shown promise. The Quit 4 Life program is an interactive youth cessation program that can be offered in a group setting or may be completed individually online and is offered in both official languages. A 1995 evaluation of the program identified that at a 12 to 18 month follow up, 16% of participants, which included Anglophones and Francophones, indicated they had quit smoking (12% had immediately quit at the end of the program). A reduction in amount smoked and an increase in quit attempts was also noted by participants at follow up (Health Canada, 2005). In addition to the above, evidence from the United States indicated that funding for implementation of the CDC's Guidelines for School Health Programs to Prevent Tobacco Use and Addiction reduced smoking prevalence, suggesting that the implementation of a comprehensive school based program can be an effective component of antitobacco efforts (Morbidity and Mortality Weekly Report [MMWR], 2001). Significant barriers to recruitment, retention and follow up have been noted with school based cessation programs. Barriers to recruitment include parental permission, time of day a school-based smoking cessation program is held, low school attendance by high risk youth and punishment from school administrators (Massey et al. 2003). One-on-one interactive recruitment with students, having a facilitator that cared and that was not from the school, having incentives and delivery during school hours were identified as important factors for recruitment and retention (Massey et al.

2003; Balch, 1998; Gillespie, Stanton, Lowe, & Hunter, 1995). Characteristics of smokers which relate to their interest in participating in school based programs include regular smokers who have made unsuccessful quit attempts over the past year, the more frequent the individual has made unsuccessful quit attempts, occasional smokers who self-identify as being smokers, and students awareness of program availability (Leatherdale, 2006; Leatherdale & McDonald, 2007).

Telephone counselling/quit lines.

Telephone information/counselling lines have become a popular and effective treatment choice for adults. The December 2000 report from the Surgeon General, “Reducing Tobacco Use”, identified that proactive telephone counselling may significantly increase the effects of self-help materials on smoking cessation rates (CDC, 2000). In addition, an effectiveness review conducted by the CDC revealed that a 41% improvement in quit rates were seen in those who received telephone counselling compared to those who did not receive counselling (The Guide to Community Preventative Services, 2003). Research identifying the impact that telephone counselling has specifically toward youth tobacco cessation is lacking. Focus group responses conducted for research on implementation methods of youth cessation programs identified that toll free telephone lines were not well received as a favourable method of implementation, however youth specific lines were identified to be more favourable (Balch, 1998). Fiore et al. (2004) identified that a national quit line service providing both counselling and medication may reach up to 16% of smokers every year, thereby creating a large impact on cessation rates on the whole. In addition, telephone counselling may be

most appropriate to reach the geographically isolated youth or those youth who want anonymity when seeking cessation assistance (Milton, Maule, Backinger & Gregory, 2003).

Internet based youth cessation services.

Over the past decade there has been explosive growth in the access to the internet, suggesting that the internet may be a viable channel through which health care professionals can reach and treat the large population of smokers who are unlikely to use other modes of intervention. In Canada it is estimated that 99% of teens use the internet (Cameron & Skinner, 2004). Examination of current literature involving youth cessation and internet resources reveals that quit rates using this method vary widely but are comparable to many other non-internet smoking cessation trials based on intensive clinical treatment (Feil, Noell, Lichtenstein, Boles & McKay, 2003; Lenert, et al., 2003; Wang, & Etter, 2004; Edwards, Elliott, Conway, & Woodruff, 2003). Some research indicates that youth participants utilizing the internet to meet their cessation needs find that elements such as accessibility of computers/internet, interactivity, timeliness and anonymity are advantages of this method of cessation service delivery (Frisby, Bessell, Borland, & Anderson, 2002; Parlove, Cowdery, & Hoerauf, 2004). Although the internet may show promise when addressing cessation needs there are some concerns with the accessibility and quality of the data found using this source. Edwards et al. (2003) conducted a study to assess web sites related to teen smoking cessation on the internet. Their findings indicated that “legitimate on-line smoking cessation help for teens is constrained by search engine choice and the amount of time teens spend looking through

potential sites” (p. 262). Not only can it be difficult to find youth cessation information or programming on the internet but those that are found may be of poor quality as they may fail to implement reliable treatment guidelines (Brock et al., 2004). Additionally, Patten et al. (2006) noted it may be a major challenge to sustain teen engagement in this type of cessation programming.

Pharmacotherapy.

Within Canada and the United States, there are a number of pharmacotherapy treatments available for use, including Nicotine Replacement Therapy (NRT) which are delivered in a number of ways including a patch, gum, lozenge and inhaler as well as antidepressant therapy (Bupropion) and the newest treatment option available, Varenicline. The Ontario Medical Association (OMA) (2008) has noted that all 3 forms of tobacco cessation aids are effective in the adult population (with or without counselling). Furthermore, they identified that NRT and Bupropion has been shown to produce quit rates double of those who receive a placebo and Varenicline triples quit rates.

Even though pharmacotherapy has been shown to be effective in adult populations the same can not be noted with adolescent use of such treatment modalities. There are few studies on adolescent pharmacotherapy use and those that have been conducted have not shown promising results including two open-label, uncontrolled studies that have been conducted with adolescents utilizing NRT (Garrison, Christakis, Ebel & Curry, 2003). Hurt et al. (2000) identified that NRT in youth produced an 11% abstinence rate at 6 weeks which subsequently dropped to 5% at 6 month follow up. The systematic

reviews conducted by Sussman (2002) and McDonald et al. (2003), both concluded that NRT does not appear to produce a significant positive treatment effect in youth. Health Canada has not approved the use of over the counter NRT by persons under the age of 18. Furthermore, pharmacological approaches utilized in children can be costly, be associated with misuse and require further evaluation (Jairath et al. 2003). Despite this, NRT continues to be used by adolescent smokers and non-smokers. In addition, the OMA recommends that cessation medication be made available to those under the age of 18 who want to quit (OMA, 2008). Recent research has pointed to the potential benefit of Bupropion (Zyban). Muramoto, Leischow, Sherrill, Matthews, & Strayer (2007) conducted a clinical trial with over 300 adolescents age 14 to 17 who smoked six or more cigarettes per day and had tried to quit at least twice before. They noted that at six month follow up, those youth who used 300 mg of Bupropion for the six weeks and had individual cessation counseling had higher quit rates than their peers who were given a placebo and individual counseling. They noted that the tobacco cessation rates were lower in the youth than their adult counterparts and recommended that youth may need a longer course of treatment, such as 12 weeks, which is provided for adults. Both the OMA and the Public Health Service Clinical Practice Guidelines for Youth Cessation in the United States state that Bupropion when used with smokers under the age of 18 should be based on an assessment of the potential risks and benefits of the treatment during physician consultation (Milton et al. 2003; OMA, 1999). There were no studies found looking at the effectiveness of Varenicline in the adolescent population.

Population Based Strategies

Alamar and Glantz (2006) explained that it is social circumstances, such as policies establishing smoke-free workplaces and restaurants as well as aggressive media campaigns, individual attitudes, perceived social pressure, and price of tobacco products that determine the level of cigarette consumption.

Reduction of human exposure to environmental tobacco smoke (ETS).

The importance of changing the social milieu that supports prevention and cessation is not conceptually new. Zhu et al. (1999) commented that it is highly possible that smoke-free policies in the places that adolescent smokers work, live, learn and play would be important in reducing smoking in this age group.

Strong local restaurant smoking regulations are associated with favourable smoking related social norms among youth as they reduce smoking participation and consumption among this population (Albers et al., 2004). Research conducted by Kadowaki et al. (2006) noted a 7% decrease in smoking when comprehensive environmental changes such as smoke-free indoor legislation and price increases via tax levies were introduced.

It is clear that restricting smoking in public places and workplaces leads to a decline in the number of smokers (Ontario Tobacco Research Unit [OTRU], 2004a, 2004b) and an increase in demand of cessation services overall and has been demonstrated with ecological and longitudinal studies of individuals, among young and older smokers, and for both sexes. A systematic review of the effect of smoke-free workplace policies by Fichtenberg and Glantz (2002) concluded that totally smoke-free workplaces are linked

with reductions in the prevalence of smoking by approximately 4% and a reduction in the number of cigarettes smoked per day.

The school environment plays a critical role in the development of youth as they spend much of their young lives in these institutions. Like smoke-free public places and workplaces, creating a smoke-free school environment creates a social setting that supports youth tobacco use prevention and cessation. A report produced by Fiore, Bailey, Cohen, Dorfman, Goldstein, Gritz, et al. (2000) recommended that all patients attempting tobacco cessation be provided social support as part of the treatment. It follows then that studies have indicated that lack of rules regarding smoking in schools is positively associated with smoking in adolescents (Eisenburg & Forster 2003). Fortunately schools are increasingly willing to develop, implement and enforce no smoking policies. These strong smoking policies are associated with decreased rates of youth smoking. Furthermore restricting smoking in schools reduces the average number of cigarettes smoked by young smokers as well as lowering smoking participation rates in young adults (Lantz et al., 2000). However it is not merely the development of policies that reduces smoking among youth but instead the degree to which these policies are enforced. Research from Whales identified that an association between school policy strength, policy enforcement and the smoking behaviours of students exists. This research revealed that in those schools where student smoking restrictions were enforced in all areas, the prevalence of smoking was lower (OTRU, 2002). There is still much work to be done within the school setting regarding policy and policy enforcement. Tubman and Vento (2001) looked at the role of antitobacco policy in tobacco prevention. They identified that strategies to enforce school tobacco policies were primarily punitive in

nature rather than having an educational or treatment focus. They further identified that there was a lower use of enforcement strategies in high school as well as the high schools antitobacco policies were less rigorous than those found in middle schools.

Tobacco price increases.

Governments, both at the federal and provincial level, have the ability to affect the price of tobacco through existing tax structures. Increased taxes on cigarettes are a key component of a comprehensive tobacco policy, are recommended by a number of leading health authorities (Canadian Coalition for Action on Tobacco, 2004) and may function as an individual strategy or part of multi-pronged approach to reducing tobacco use (McDonald, Colwell, Backinger, Husten, & Maule, 2003; Sussman, 2002). Increases in excise taxes have been shown to be effective in reducing smoking among youth (Leverett, Ashe, Gerard, Jenson, and Woollery, 2002) and benefit those who are economically disadvantaged as well as those from certain racial and ethnic groups the most (Fiore et al., 2004).

There is a substantial amount of literature outlining the impact that the price of tobacco products has on its consumption and demand, particularly among young individuals (CDC, 2000). Hopkins et al. (2001) conducted a systematic review of published studies and concluded that increases in price of tobacco results in decreases in both the number of people who use tobacco and the quantity they consume. In addition they note that a price increase was effective among a variety of adolescents and young adults. It is generally accepted that youth however are more price sensitive than adults which is most likely in part due to their limited disposable income (Waller, Cohen, Ferrence, Bull, & Adlaf, 2003). To identify the impact of the cost of tobacco on

consumption an expert panel concluded that the adult elasticity of demand clustered around -0.04 . This implies that a 10% increase in the price of cigarettes will lead to a 4% decrease in overall demand/consumption of cigarettes. This reduction in consumption is a result of former smokers not restarting, smokers quitting, reductions in amounts smoked among those continuing to smoke and tobacco initiation among youth (Fiore, et al., 2004; Lantz et al., 2000).

Mass media campaigns.

Mass media community campaigns play a vital role in the reduction of tobacco use among a population. In particular, mass media campaigns have the ability to reach a large fraction of target audiences relatively inexpensively when compared with community based programmes (Farrelly, Niederdeppe, & Yarsevich, 2003).

Fiore et al. (2004) note that comprehensive multicomponent tobacco control programs, which include media campaigns, have been markedly effective in reducing tobacco use prevalence wherever they have been introduced. Community campaigns vary widely in design, delivery and intensity. Some focus on single target audiences with a focused message while others use multiple message themes to curb smoking across the entire population. Smoking prevention campaigns have shifted focus over the past three decades from messages of long term health effects of smoking to denormalization messages (Farrelly, et al., 2003). Recently, a majority of large scale state wide campaigns in the United States have taken a counter industry approach. Community campaigns in the area of tobacco control have been understudied. However, there is evidence that suggests aggressive youth prevention campaigns have been effective in reducing youth tobacco use. What is unclear is if there is any one particular message strategy that has

greater support than others (Farrelly, et al., 2003). Messages that have been effective include industry manipulation, second hand smoke themes, ads that portray the serious consequences of smoking in a graphic, dramatic and emotional way, messages focusing on smokers endangering their family, depictions of smokers as unattractive and insecure and modelling of refusal skills. Those campaigns that have met with little success in reducing smoking intentions include those in which the messages concern themselves with health and cosmetics (bad breath and yellow teeth), consequences of smoking and the manipulative marketing strategies of the tobacco industry. Characteristics of effective campaigns include: substantial levels of campaign exposure; carefully planned and specifically targeted, well funded, and lastly campaigns that are complemented by school or community interventions (Farrelly, et al., 2003).

Sussman, Dent, and Lichtman (2001) identified that enhanced antitobacco messages in a variety of formats within the school community have been utilized in an attempt to shift attitudes and increase ones motivation to quit. These efforts have meet with success as school based programs in conjunction with community interventions (media advocacy, youth antitobacco activities, family communication, youth access) are effective at reducing youth tobacco use (Biglan, Ary, Smolkowski, Duncan, & Black, 2000).

Factors Impacting the Provision and Demand for Youth Cessation Services

There are numerous environmental, social, political, and health care factors, both federally and provincially, lending to the provision and demand of youth cessation services at the local level. An overview of these factors is provided below.

The Federal Tobacco Control Strategy has set a target of reducing the percentage of youth smokers from 15% to 9% by 2011 and to help meet this challenge Health Canada is aiming to increase cessation services (Health Canada, 2002). Furthermore, there has been a call for and greater emphasis placed upon effective youth cessation services by practitioners and leading agencies in tobacco control (OMA 2004; Registered Nurses Association of Ontario [RNAO], 2003). In response to this call, there continues to be an increase in the number of programs being developed across North America that show promise in helping youth quit (McDonald, 2004) such as Quit 4 Life and Not On Tobacco.

Though Boards of Health in Ontario are mandated to provide as a minimum smoking cessation programs giving emphasis to populations and areas not covered by existing programs (Ministry of Health and Long Term Care [MHLTC], 1997), and a significant proportion of staff within health units would like to implement cessation support groups/classes to youth, very few health units within the province offer such services (OTRU, 2004c). Insufficient human resources along with inadequate training for staff were cited as barriers to the delivery of smoking cessation programming from health units (OTRU, 2005).

Even though one could anticipate that there would be a high demand for cessation services in Northern Ontario (due to the high proportion of students showing indications of addiction) (CAMH, 2007a; CAMH, 2007b; Zhu et al. 1999), demand for such services may be minimized, as over the years there has been a decline in the percentage of youth smokers attempting to quit (CAMH, 2007a). Additionally, if

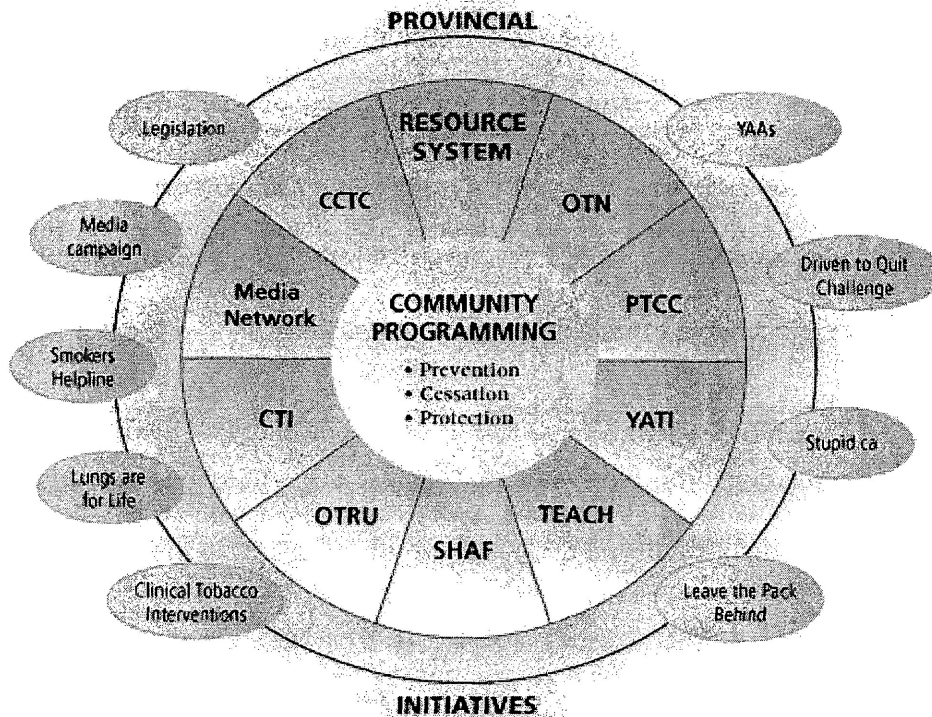
adolescents follow the cessation practices of adults a vast majority (approximately 80%) may attempt to quit on their own without any special preparation or help (OTRU, 2006b).

Notwithstanding, a majority of current adult smokers (females in particular) have indicated that they would be very likely to seek advice from their physician (over other health care providers) (OTRU, 2008a) and have shown interest in utilizing other cessation strategies such as nicotine replacement therapies and Zyban which can be prescribed by practitioners (OTRU, 2006b). Even with the provision of cessation training for Physicians the percentage of smokers receiving advice from their doctor has been shown to be less than 60% (OTRU, 2006a).

In efforts to combat morbidity and mortality relating to tobacco use in Ontario, the provincial government funds the OTS and provides funding to the resources system of the OTS identified in Figure 1.

Figure 1

OTS Resource System and Provincial Initiatives



Source: Program Training and Consultation Centre (2007). Note. Canadian Council for Tobacco Control (CCTC). Clinical Tobacco Interventions program (CTI). Media Network for a Smoke-Free Ontario (MN). Ontario Tobacco-Free Network (OTN). Ontario Tobacco Research Unit (OTRU). Program Training and Consultation Centre (PTCC). Smoking and Health Action Foundation (SHAF). Training Enhancement in Applied Cessation Counselling and Health (TEACH) project. Youth Advocacy Training Institute (YATI).

One of the objectives of this strategy includes the reduction of smoking in Ontario and the prevention of habitual use of this substance among children, youth and young adults (OTRU, 2005). In 2006/07, Ontario invested 10 million dollars in tobacco cessation initiatives for smokers (Ontario Ministry of Health Promotion [MHP], 2007).

Unfortunately, many of the cessation strategies under the OTS have adults as the target population (OTRU, 2004b). Only 3 resource system members provide resources which specifically addresses youth tobacco cessation. They include the Program

Training and Consultation Centre (PTCC), the Canadian Council for Tobacco Control (CCTC) and the Clinical Tobacco Intervention (CTI). Common evidence based resources highlighted by the PTCC and CCTC include Quit 4 Life, Kick the Nic and No More Butts (a peer led cessation program) resources. Other youth cessation resources noted included two audiovisual resources, a guide highlighting a contest to encourage cessation, A decision guide on elements to consider when developing a youth tobacco cessation program, and the “Not on Tobacco” resource. The Clinical Tobacco Intervention (CTI) highlighted an online e-learning module for physicians, pharmacists and dentists specifically designed for youth cessation counselling (Clinical Tobacco Intervention [CTI], n.d.a)

With respect to the provincial initiatives funded in part by the OTS, the only initiatives which address youth tobacco cessation in some fashion include Lungs Are For Life (school based program), Leave the Pack Behind (post-secondary campus program) and Youth Action Alliances (YAA) which have a role in cessation referrals (Lawler, Lawrance, Shic-Porter& Brunelle, 2005; Morris & Page, 2007; Ontario Lung Association 2002).

While some initiatives under the OTS such as mass media, legislation reducing individual exposure to ETS in public places (including schools) and workplaces, and prevention campaigns such as stupid.ca may increase the demand and support for cessation services, these are not specific to youth cessation services per se.

Other Provincial Initiatives which have the potential to enhancing youth tobacco cessation services include the healthy schools recognition program and the high school grant program whereby schools are encouraged to develop initiatives with the school

community and/or peer to peer initiatives that would improve school health (Joint Consortium on School Health [JCSH], 2007). Additionally, the Ontario government provides funding for high schools to engage students specifically in tobacco control projects (JCSH, 2007).

The Ontario MHP sponsored the first ever provincial Aboriginal Youth Summit that (MHP, 2007) was seen by the provincial government as the first step in reaching aboriginal youth, making them aware of the harms of commercial tobacco use and assisting them in avoiding tobacco use or stopping them smoking (Quesnel, 2007). Moreover, assistance to aboriginals is available through funding under the Aboriginal Tobacco Strategy Community Capacity Building Projects, of which cessation initiatives including those toward youth can be funded (Cancer Care Ontario, 2007).

Lastly, the Minister of Finance has raised tobacco taxes in Ontario to bring the price closer to the national average making cessation more attractive to the youth (MHLTC, 2004). Unfortunately, there has been an increase in contraband tobacco sales in Canada since 2006 equating to one out of every four cigarettes smoked in Ontario and Quebec being illicit (GfK Research Dynamics, 2006). These illegal sales and illicit use ultimately undermines the impact of tobacco price increases.

YOUTH SMOKING IN THE CITY OF GREATER SUDBURY

If we are to increase tobacco cessation among adolescents, it is imperative that we improve cessation services for them as well as encourage their participation in evidence based (assisted cessation) approaches. This can be facilitated by identifying their preferred methods in quitting smoking and by understanding the factors that would

increase one's desire for use of assisted cessation approaches. Moreover, a better understanding of the factors contributing to tobacco cessation, as well an identification of current tobacco cessation programming within the CGS will provide a foundation for recommendation to build upon current youth cessation program efforts.

The following section examines youth smoking in the City of Greater Sudbury including tobacco use prevalence and trends, characteristics relating to cessation and the demand and provision of youth cessation services. The information used to inform this section has been taken from government documents, reports from agencies involved in tobacco control, local health surveillance reports, health care association publications, local media, personal correspondence, unpublished papers and the analysis of local SHAPES Ontario data. Where applicable findings from previous authors' analysis of SHAPES data are compared with the findings of the analysis of local SHAPES data and discussed.

The analysis of the SHAPES Ontario data will focus on a local (City of Greater Sudbury) subset of the provincial data examining responses to the smoking module, as previously described (Appendix B). One school within the SDHU area participated in the survey (SHAPES Ontario, 2005b). Permission was sought from SHAPES Ontario (Appendix C) as well as school administration (Appendix D) to utilize the existing SDHU area SHAPES Ontario data for the purposes of this paper.

The analysis focuses on data that has not been previously analysed by SHAPES Ontario (Appendix E). New statistical analysis has taken the form of descriptive statistics including frequencies, cross tabulations, and logistic regressions (univariate, bivariate, and multivariate models). Statistical Package for the Social Sciences (SPSS) 16.0 was

utilized in the analysis of the secondary data and included the examination of the questions pertinent to youth cessation as well as some demographic data. Definitions pertinent to the data analysis and results are presented in Appendix F.

Frequencies are reported for respondents' age, grade, gender, self-identification of smoking status, stage of cessation, and the preferences regarding a variety of tobacco cessation methods. One's self-identification of their smoking status was determined by examining their response to the question "Are you a smoker?" Stages of cessation examined the frequency of those within the five stages of cessation. These variables were derived utilizing various response categories from three separate questions. The questions pertained to respondents' plans, and the length of, and number of attempts regarding quitting smoking.

Cross tabulations and univariate analysis focused on factors most likely to impact youth success in smoking cessation as well as examined factors influencing the students' preference to use assisted tobacco cessation methods/aids. Cross tabulations and univariate analysis described and explored possible relationship between antitobacco beliefs/practices, school grade, the number of past quit attempts and one's cessation efforts. To add statistical power response categories were clustered for antitobacco beliefs, frequency/amount smoked, assisted tobacco cessation aids, past quit attempts and self efficacy (Appendix E). One's cessation efforts were determined by their response to the question "how long ago did you quit smoking?" Individuals were considered current smokers if they responded "*I am still smoking*" to the question. Those who indicated that they had quit anywhere from less than two weeks to more than one year ago were considered to have quit smoking. The identification of respondents antitobacco practices

were derived from the question determining if they had taken part in any antismoking activities or events at their school since the beginning of the school year. Their antitobacco beliefs were determined by their response to the question “do you think all public places (e.g. restaurants, malls, arcades, etc.) should be smoke-free?”

Cross tabulations and univariate analysis were also completed to describe and explore the relationship between amount/frequency smoked and ones self-identification as a smoker. Frequency/amount smoked was derived by examining participants’ responses to “think about the last 30 days. Did you smoke a cigarette, even just a few puffs?” In addition the relationship between one’s preference regarding a variety of cessation methods/aids and past quit attempts, gender, and self-efficacy related to quitting were examined. Those individuals who indicated that they would “*definitely*” or “*maybe*” use the cessation method/aid were identified to have a preference for the method/aid. It was determined that those who had selected “*never*” regarding the selection of a particular cessation method/aid did not prefer these methods. Past quit attempts were calculated by analysing students’ responses to the question “how many times in the past year have you tried to quit smoking?” One’s self-efficacy relating to tobacco cessation was examined using responses from the question “how sure are you that you could quit smoking if you wanted to?”

Bivariate analysis focused on an in-depth analysis of factors impacting preferred cessation methods. The relationship between ones self-efficacy relating to tobacco cessation and their participation in a quit smoking program was examined while controlling for gender. In addition, multinominal logistic regression was conducted

examining the relationship between ones gender and preferred cessation aids, as well as controlling for past quit attempts and ones self-efficacy.

Results

The results presented below were derived from the analysis of a subset of the SHAPES Ontario dataset consisting of youth from the CGS. Participant demographics, tobacco use, cessation attempts (and environmental factors supporting these) as well as participants interest in cessation aids and factors associated with an increase in utilization of assisted cessation approaches are presented. Results with frequencies less than five are not reported as per data use agreement and valid skip frequencies are not included in reported outcomes.

Of the 776 eligible students, a total of 589 questionnaires were completed yielding a 72% response rate (SHAPES, 2005a). A majority of youth who responded were in grade 12 (32%). Grade nine students comprised 21% of respondents while grade 10 and 11 made up 25% and 21% respectively. A majority of the respondents were male (54%) (Appendix G1).

Daily and occasional smokes made up 36% of the students surveyed. When asked their perception of peer smoking, a large majority (71%) believed that smoking is more common than it actually is (SHAPES 2005a).

Of the respondents, 77% did not self-identify as a smoker while 23% did. Two percent did not state their smoking status (Appendix G2). Twelve percent of those that did not self-identify themselves as a smoker did smoke some or one or two days in the last 30 days. In fact a majority of those who would be considered occasional smokers (70%) did not identify themselves as a smoker (Appendix G7). Logistic regression

analysis (see Appendix G9) revealed that the amount an individual smokes is significantly associated with their self-identification as a smoker. Analysis indicated as one increases their smoking from some days or one to two days to almost every day or every day in the past 30 days the odds of them self-identifying as a smoker increases exponentially (OR=82.02, OR=2551.50 respectively).

Examination of environmental factors contributing to cessation revealed that 93% of respondents believe that their school has a clear set of rules regarding smoking for students to follow. In addition, 92% of students supported the statement “If students are caught breaking the smoking rules at this school they get into trouble”. Interestingly, 74% of the students also noted that a lot or some students smoke where they are not allowed to at their school. Respondents were asked about support for those who wanted to quit smoking. A majority of students (58%) noted that there was help available at school for those wishing to quit while 38% did not know and 4% identified that there was no help available for smokers at their school (SHAPES 2005a).

The secondary school students were asked to identify how long ago they quit smoking. Of those who responded (n=286), a vast majority (70%) reported that they had never smoked or only smoked a few times. Over one-fifth of respondents (22%) indicated that they were still smoking. Those who quit for six months or less comprised of 3% while those who quit for six months or more made up 5% of respondents (Appendix G4).

Common indicators outlining stages of cessation according to the TTM were identified in the SHAPES Ontario questionnaire. Analysis of responses identifying participants stage of cessation yielded a small sample size (n=42). Appendix G3

highlights most individuals were considered to be in one of three stages of cessation including maintenance (33%), precontemplation (26%) and contemplation (21%).

When asked about the number of times they tried to quit smoking, 59% of daily smokers indicated they attempted to quit one or more times (SHAPES 2005a). There appears to be a consistent decline in the percentage of still smokers from grade nine (23%) to grade 11 (16%). However, this decline does not persist into the senior grades as the largest percentage of still smokers was found in grade 12 (43%). With respect to tobacco cessation, there appears to be an increase in the percentage of students who quit from 24% in grade 11 to 40% of those in grade 12 reporting they have quit (Appendix G5).

Interestingly enough, still smokers comprised 100% of those who tried three or more times in the past year to quit. Of those who have quit, 83% indicated that they had tried to quit one to two times in the past year (Appendix G6).

The results outlined in Appendix G8 demonstrated it is possible that those who have taken part in antismoking activities (OR=1.92, 95% CI= 0.21, 17.50) as well as those who were in earlier grades were more likely to quit smoking. It is possible that those who have participated in antismoking activities in their school are more likely to have quit smoking however this trend is statistically not significant (p-value=0.56). One's belief that all public places should be smoke free was significantly associated with increased odds of tobacco cessation among the youth surveyed. In fact, respondents who believed that all public places should be smoke free were 9.5 times more likely to have quit smoking (p=0.004. 95%CI=2.05, 43.69) than those who do not support this view.

Students were asked to rate whether they would use certain resources or strategies to quit smoking if they were thinking of quitting smoking (see Table 1). The most preferred strategy identified by the respondents (including the definitely and maybe category) was “*quitting on their own*”. This was followed by “*friends advice*” and “*nicotine gum or nicotine patch*” as preferred cessation methods. Respondents also identified that they would utilize the services of professionals such as their doctor and/or teacher, guidance counsellor, or school nurse. Close to 20% of youth reported that they would definitely/maybe use web based tools (chat room on the internet (7%) and information site on the internet (14%)). Just fewer than 10% of youth indicated that they would definitely/maybe use group meetings at school or telephone quit lines to help them kick the addiction. Of interest is the students responses in the never category. Almost 30% of youth indicated that they would never use the chat room on the internet to quit smoking and or use group meetings at school.

Table 1

Youth Interest in Various Cessation Methods/Aids

Cessation Method	I do not smoke		Definitely or Maybe		Never		Not stated	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Self- help Book	170	58.4	37	12.7	75	25.8	9	3.1
Group meetings at school	170	58.4	26	8.9	83	28.5	12	4.1
My doctor	172	59.1	56	19.3	54	18.6	9	3.1
Chat room on the internet	171	58.8	19	6.5	87	29.9	14	4.8
Information site on the internet.	171	58.8	41	13.8	70	24.1	10	3.4
Teacher, guidance counsellor or school nurse	171	58.8	41	14.1	66	22.7	13	4.5
Free telephone quit line	169	58.1	26	8.9	82	28.2	14	4.8
Friend's advice	168	57.7	70	24	43	14.8	10	3.4
Quit on my own	171	58.8	84	28.9	22	7.6	14	4.8
Nicotine gum or nicotine patch	169	58.1	59	20.3	53	18.2	10	3.4
Other	154	52.9	14	4.8	27	9.3	96	33

Note. N=291, Freq.=frequency. %=percentage

Cross tabulation responses to assisted tobacco cessation methods/aids findings are presented below in Table 2.

Table 2

Factors Associated with Preference for Assisted Cessation Methods/Aids

Factors Influencing Preference for Assisted Tobacco Cessation Methods/Aids		Preference for Assisted Tobacco Cessation Methods/Aids	
		N	Percent
Gender	Male	52	54
	Female	44	46
Number of Cessation Attempts in Last Year	Not Tried	24	41
	Tried 1-2 times	24	41
	Tried 3 or more times	11	18
Self-efficacy Related to Tobacco Cessation	Sure can quit	46	67
	Unsure can quit	23	33

Note. N= Number of responses.

When analyzing responses from males and females, it is quite evident that the great majority of both sexes who responded, would be willing to use assisted tobacco cessation methods/aids. Within gender, 80% of males and 96% of females responded that they would definitely or maybe use various assisted tobacco cessation methods/aids as opposed to never using these strategies. Males however made up almost 87% of responses that indicated they would never use assisted cessation methods. Additionally, more individuals who had either not tried or tried to quit once or twice in that last year indicated that they would prefer to use assisted methods over those who had tried to quit three or more times over the past year. More individuals with a positive self-efficacy relating to tobacco cessation identified they had a preference to using assisted cessation methods (67%) compared to those who had a lower self-efficacy (33%). In addition, there were a higher percentage of those who had a positive self-efficacy relating to tobacco

cessation that indicated that they would join a school cessation program (74%) than those with low self-efficacy (Appendix G9). Logistic regression analysis however revealed it is possible that those with a positive self-efficacy relating to tobacco cessation are more likely to join a school based tobacco cessation program (OR=2.01. $p=0.235$. 95%CI= 0.64, 6.38) than those with a low self-efficacy (Appendix 10). This finding is consistent even while controlling for gender (OR=2.59. $p=0.131$. 95%CI= 0.753, 8.92) (Appendix G 12). Additionally, one's gender was found to impact one's overall preference for assisted tobacco cessation methods/aids (Appendix G11). Females were 5.5 times more likely (OR=5.50. $p=0.03$. 95%CI= 1.18, 25.70) than males to indicate that they would use assisted cessation methods/aids. Even while controlling for one's past quit attempts, males were still less likely (OR=0.11. $p=0.04$. 95%CI= 0.01, 0.90) than females to choose assisted tobacco cessation methods/aids (Appendix G13). However when controlling for both quit attempts and self-efficacy the statistical significance of one's gender in their preference for assisted tobacco cessation methods/aids was no longer evident (OR=0.121. $p=0.055$. 95%CI= 0.014, 1.045) (Appendix G14).

Prevalence and Trends

When utilizing the defined values for daily and occasional smoker, the CGS youth population surveyed by SHAPES Ontario, has a significantly higher proportion of individuals who smoke compared to the provincial average found by SHAPES (SHAPES, 2005a). Within the CGS there are two cultural differences which may contribute to the higher than provincial average smoking rates including a higher Francophone population (Public Health Research Education and Development & Institut Franco-ontarien, 2005)

and aboriginal population (Statistics Canada, 2002). When using the percentages found of those who self-identify as a smoker in the local SHAPES Ontario survey however, the percentages were lower and similar to those reported in the SDHU region for those 12 years and over in other surveys (Statistics Canada, 2005). The discrepancy between the percent of those defined as smokers and percent of those self-identifying as a smoker is as a result of many occasional smokers not identifying themselves as smokers a finding consistent with previously analysed provincial SHAPES data and local analysis. As females progression to smoking addiction may be quicker (Gervais et al., 2006), as they accounted for a larger percentage of occasional smokers (SHAPES 2005a) and as they are more likely to use assisted cessation services, one way to increase cessation rates may be to specifically target messages to these individuals (Mermelstein, 2003; Sanchez del Mazo, 2005; Sussman, 2002) highlighting their misperceptions and identifying the assisted cessation supports available.

As identified in previous research, social influences (Amos et al., 2006; Eisenburg & Forster, 2003; Schwartz & O'Donnell, 1996), as well as perceptual norms (Albers et al., 2004) may have played a role in tobacco consumption for this population as smokers who participate in the SHAPES survey locally often had close friends and family whom smoked. Furthermore most students believed that smoking was more common than what was reported (SHAPES 2005a) leading one to believe that smoking is seen as socially acceptable and perhaps even an expected behaviour for these individuals.

Cessation

Youth smokers were represented in all stages of cessation as identified in the TTM. Few however were actually in the preparation and action stages, which are typical of previous findings (Moolchan et al., 2003), and highlights that these youth may see the importance of quitting but do not recognize the urgency for such action (Balch, 1998). This finding supports the need for cessation strategies which target an individual's specific stage of readiness and not simply those in the preparation and action stage of readiness which have the potential to reach only a small group of individuals (Granda-Orive et al., 2004).

Factors such as tobacco beliefs, cessation attempts, and age have all been identified as factors associated with making quit attempts or quitting smoking (Mermelstein, 2003; Sanchez del Mazo, 2005; Sussman, 2002). One's tobacco beliefs, particularly those supporting smoke-free spaces were positively associated with cessation efforts. It is anticipated that this is due to the desire of those who have quit having supportive environments, ones that set new societal norms for these individuals (Albers et al., 2004; Sanchez del Mazo, 2005; Sussman, 2002; Zhu et al., 1999).

The steady decline noted in those who are still smoking in the junior grades may be indicative of the fact that those who are younger and most likely occasional smokers are more successful in cessation attempts (Mermelstein, 2003; Sanchez Del Mazo, 2005; Sussman, 2002). It is anticipated that the increase in still smokers in the senior grade is due to a number of factors. For instance, the smoking patterns of these individuals may lead them to self-identify as smokers. Moreover, these individuals may have achieved an addiction level that makes success with tobacco cessation more difficult (Sanchez del

Mazo, 2005). This may also signify the age of tobacco initiation has shifted to a more senior level.

Unlike previous literature, it was not evident that the more quit attempts one had the more likely they were to have quit (Zhu et al., 1999). The results most likely indicate that the one or two quit attempts made by those who quit were more serious than the three or more attempts made by those still smoking. Even though the number of quit attempts that one takes is noted to improve cessation there are a number of factors that impact the likelihood an individual will quit. With the small sample size and limited questions it would not be possible with the existing data set to control for all the factors to identify the impact the number of cessation attempts has on one's success in quitting smoking.

Provision and Demand for Youth Cessation Services

One may also argue that the desire for tobacco cessation among youth is among the foremost opportunities for provision of services. This desire is operationalized through cessation attempts. Utilizing the local SHAPES data (tobacco use prevalence and cessation attempts) and population estimates for youth residing in the CGS, it is estimated that there are approximately 2250 youth who want to quit within the CGS. Additionally, smoking alone, an indication that smoking is no longer a social activity and a potential addiction was indicated by over half the group of adolescent smokers (SHAPES, 2005a). These individuals who have progressed to addiction will need assistance if they are to quit smoking.

Analysis into the type of cessation methods/aids in which youth are interested in has the potential to guide tobacco control practitioners in planning cessation services which are cost effective and have the greatest impact over a population. Moreover, having a better understanding of those characteristics which have an impact on an individual's choice to participate in assisted cessation practices is invaluable to increasing cessation rates.

The youth, for the most part, did not prefer those cessation approaches which are supported by research and recommended by health authorities (Sussman, 2002; The Guide to Community Preventative Services, 2003; Stead & Lancaster, 2005; CDC, 2006; OMA, 2008; Health Canada, 2007). Even though researchers in the past had anticipated youth telephone lines and internet based resources to hold great promise (Lantz, et al., 2000) these were not well desired by youth surveyed. The favoured cessation method identified by the youth was quitting on their own which is not unlike previous findings from the analysis of the provincial SHAPES data and other reports (Leatherdale & McDonald, 2007; Amos et al., 2006; Balch, 1998). This choice may simply be reflective of experiential knowledge (Wang, 2001) and reinforcement of beliefs regarding adult practices (Curry, Sporer, Pugach, Campbell, & Emery, 2007). This may also be reflective of their self-efficacy or intention to quit (Hublet et al.2002), lack of knowledge regarding the benefits of using cessation aids (Leatherdale & McDonald, 2007) or the lack of availability/accessibility of other cessation methods. Furthermore, it may be that youth like their adult counterparts, are unfamiliar with smoking cessation aids (Leatherdale & McDonald, 2005). If one is to increase a youth smokers' desire to participate in cessation services, they need to be aware of such services (Leatherdale, 2006).

Participants in the study expressed a desire to utilize a select number of NRTs including the gum and patch. Even though the use of these have not proven to produce positive treatment effects in adolescents (Sussman, 2002; McDonald et al., 2003) further exploration of youth specific treatment regime may be warranted as these methods are being utilized by youth (Jairath et al. 2003) and are recommended by the medical community (OMA, 2008). Moreover, if youth indicate interest in utilizing specific NRT then it is possible that they may have an interest in the use of other types of NRT as well as pharmacotherapy, such as Bupropion, which have produced positive treatment outcomes in adolescents (Muramoto et al., 2007). The youth participants demonstrated some interest in consulting with their physician in their attempts at cessation. This holds promise in improving cessation rates amongst adolescents since Physicians advice has proven to be influential on an adolescent's health practice (Alfano et al., 2002) including cessation (Sussman, 2002) . Health care practitioners have models, clinical practice guidelines and resources at their disposal (Alfano et al., 2002; Jairath et al. 2003) which follow CBA principals and TTM, both of which have been shown to be effective in motivating and assisting individuals in their cessation attempts (McDonald et al., 2003; Coleman-Wallace et al., 1999). Despite participant interest in consultation with their doctor, it is anticipated that their interest may be met with some trepidation as evidenced by the reported lack of screening and counseling for smoking (Alfano et al., 2002). In addition, if youth are unfamiliar with smoking cessation programs as noted above they may be reluctant to seek support from health care professionals. Issues of confidentiality can also play an important determinant to seeking health care professional assistance in their efforts (Lantz et al., 2000).

Despite that there is minimal interest in school based programs, abandoning this form of cessation approach may be premature. Previous literature has demonstrated the impact (Sussman, 2002; Horn et al., 2004; Health Canada, 2005), cost benefits (Mermelstein, 2003) and program and participant characteristics likely to produce success regarding recruitment and retention in school based programs (Massey et al. 2003; Balch, 1998; Gillespie et al., 1995; Leatherdale, 2006; Leatherdale & McDonald, 2007). Moreover, Youth need a variety of flexible cessation options (Mermelstein, 2003) of which school based programs can be included.

Considering none of the unassisted methods of cessation are recommended by health authorities and the literature, an examination of characteristics related to a positive opinion toward using assisted methods is warranted. Results suggest that ones gender and self-efficacy may play a role in ones preference for participation in assisted tobacco cessation approaches. The literature highlights this, and previous findings including the findings from the analysis of provincial SHAPES data identified that those with lower self-efficacy were more likely to participate in various assisted methods (Hublet et al. 2002; Leatherdale, 2006). The local results suggested the opposite, that those with positive self-efficacy were more likely to join a school based cessation program. This variance however, is most likely explained by the higher number of participants in this sample whom believed there were services at their school (SHAPES 2005a) as compared to participant beliefs outlined in the analysis of provincial SHAPES research where just over one quarter of students believed there were services at school for them (Leatherdale, 2006). This stresses again the importance of making individuals aware of existing services.

Two environmental factors that may inhibit the desire for cessation among youth in the CGS are their distorted perception of tobacco use prevalence and the inconsistencies between rules limiting exposure to ETS and practice. Even though a large majority of students acknowledged that there are rules regarding smoking in school and that if these rules are broken that there are consequences, students were still identified as not following the established rules. This incongruence may be due to a number of factors including school staff and administration's inability and/or willingness to enforce the rules on a consistent basis, the extent and manner to which the consequences are delivered, and youth's perception of the risk of punishment (Balch, 1998). It would be most advantageous to identify why this discrepancy exists and it is anticipated that if solutions are sought and implemented that cessation efforts of students and staff would be further supported (Lantz et al., 2000).

There exists the capacity at the local level, particularly within the SDHU to address youth cessation. Specifically, the SDHU has significant human resources allocated to work under the SFO strategy. Furthermore, they have staff members working as PTCC consultants, a cessation specialist offering individual in person and telephone cessation counseling (without NRT distribution to youth) (SDHU, 2006c; V. Kuula-Ross, personal communication, December 31, 2007), and a Public Health Nurse delivering other local tobacco programming. Additionally they have staff enforcing the smoke-free legislation (including school properties) (F. Brunet-Fechner, personal communication, April 8, 2008) as well as staff working with local secondary school students to deal with health issues (including tobacco) (SDHU, 2007). Also, SDHU staff have received tobacco cessation resource training (i.e. Quit 4 Life, Lungs are 4 Life) (A. Berthiaume, personal

communication, January 10, 2008; R. Pathammavong, personal communication, April 3, 2008; SDHU, 2006b). Complimentary programming at the SDHU which would enhance the implementation of youth cessation services within the CGS include the SDHU volunteer program (SDHU, n.d.a) and the availability of expert staff whom are knowledgeable and experienced in program evaluation through the Public Health Research Education and Development Division. Furthermore, the health unit is also affiliated with the local university (Laurentian University) which may be able to offer assistance with youth cessation program implementation and evaluation (SDHU, n.d.b).

In Addition, the SDHU has developed a good working relationship with the local educational institutions, health care professionals, administrators at the native alternative school as well as other community agencies. The SDHU is seen as a credible source of information regarding tobacco as evidenced by the number of requests for information and classroom presentations throughout the year (SDHU, 2004b). The strong capacity is no doubt due in part to the health unit's mandate to address tobacco use.

Even with the SDHU's capacity, there is little programming specifically designed or implemented for this age group other than a peer support cessation intervention with "hard to reach/at risk" (homeless, out of school, unemployed) youth 16 to 24 years of age (SDHU, 2006a). A review of all 3 local YAA's (Urban, Francophone and Aboriginal groups) plans show no specific mention of referring to cessation services (OTRU, 2008b) nor mention of media messaging encouraging youth cessation. A review of media activity for the local area (North East) did not reveal any youth cessation media activity for 2007 and messages regarding denormalization accounted for only 1% of the media activity in the area in 2007/2008 (The Media Network [MN], 2008).

At this time there does not appear to be any agencies or programs within the CGS that specifically addresses youth tobacco cessation as a separate component from other cessation efforts on an ongoing basis. A scan of both a local telephone directory and a tobacco resource directory confirmed this. Resources that were youth specific were web-based (SDHU, 2006c) with no local coordination.

Physicians as well as other allied professionals have received training over the past 7 years from CTI to build capacity in meeting their client's cessation needs. However, few physicians, as well as other health care professionals from the CGS have taken advantage of such opportunity (J. Hart, personal communication, December 19, 2007).

As demonstrated previously, schools themselves have the ability to begin addressing youth tobacco cessation. In addition there exists a real opportunity to improve tobacco cessation among aboriginals, a vulnerable population, through the Aboriginal Tobacco Strategy Community Capacity Building Projects. Unfortunately these opportunities have not been utilized extensively (Ontario Ministry of Education, n.d.a; T. Oderkirk, personal communication, December 4, 2007; T. Sandy, personal communication, December 18, 2007).

Despite the great many opportunities, there are serious challenges to the provision of youth tobacco cessation programs. Accommodating youths' hectic and irregular schedules can pose a large barrier to reaching youth through structured cessation services. Additionally, with the limited amount of resources and competing priorities among health professionals and agencies/organizations, shifting the focus to comprehensively address youth tobacco cessation may be insurmountable. In addition, tobacco typically causes

health problems well after adolescents and there are other issues that may be seen as causing immediate damage to adolescent health. Alcohols' impact, for example, is now being compared to that of tobacco and is seen to have a larger impact than that of tobacco during adolescence (Degano, Fortin & Rempal, 2007).

Limitations

Analysis of secondary data from the SHAPES Ontario data can not be inferred as the survey was cross sectional in nature. Furthermore the data from SHAPES Ontario did not include linguistic or cultural information therefore analysis could not be conducted to determine if there is variance across ethnic groups preferences in cessation methods. In addition, data on tobacco cessation approaches used in previous attempts was not available. Moreover, these data were based on self reports and therefore the validity of responses can not be guaranteed.

Much of the information that was gathered for the scan was collected through electronic means (i.e. websites and reports). In some instances, this method of collection may provide for data that is somewhat outdated. The resource utilized for the scan of media was specific to the English language and only included tracking for print, radio and television. Other mediums such as the internet were not tracked despite the fact that it is a popular medium for youth.

As the author of this paper has been employed at the SDHU, understanding of service provision is more in-depth than that for other agencies and this may therefore inaccurately represent proportional capabilities compared to other community agencies. Also, some of the data collected at a provincial or regional level/organization was not

available at a local level leading to a somewhat incomplete picture. Even though the scan revealed the implementation of cessation resources for youth, little was identified regarding reach or impact of such. Lastly, a comprehensive scan of online resources was not completed but instead a more nationally recognized list of the tobacco control community was provided. An extensive review of all online resources is beyond the scope of this paper.

RECOMMENDATIONS FOR PUBLIC HEALTH POLICY, EDUCATION AND PRACTICE

The following recommendations are presented within the context of public health policy, practice and education. It is anticipated that if implemented, these individual and population based strategies will improve the environmental supports and individual counselling leading to an overall increase in demand for and provision of evidence based cessation support for youth.

Public Health Policy

As youth may know very little about smoking cessation aids (Leatherdale & McDonald, 2005) and physician intervention is both welcomed by youth and can improve cessation (Alfano et al., 2002; Sussman, 2002), it would be of great value if screening and referral protocols to physicians were implemented at the SDHU. Screening protocols should be developed based on CBA principles and training on these principles delivered to frontline staff. Moreover, SDHU staff, due to their expertise, credibility and partnerships/networks are in a optimal position to work with and advocate for the development of policies within other health care agencies, schools and community

agencies/groups that support the above protocols and training. This diverse policy approach would address youths' variability in their readiness to quit (Zhu et al., 1999) by offering a flexible systematic support structure providing the necessary help when desired and would introduce a consistent motivational approach to move youth to cessation. Moreover, it is anticipated from the results of the local SHAPES data that, such a policy if implemented would lead to an increase in youths' self-efficacy toward cessation, improving their desire to utilize assisted cessation methods.

Public Health Practice

Community mobilization is seen as an effective tool in health promotion and allows for an increase in a communities capacity to address specific health needs (Howard-Grabman, 2000). This would be a key step in increasing youth tobacco cessation as a priority level within the community as well as reviewing and moving forward in the coordination and provision of sustainable services and strategies. Moreover, this coordination can facilitate procurement of finances to address youth cessation. It is therefore recommended that all key stakeholders (including those from vulnerable populations) who are involved or have a role in youth tobacco cessation, be mobilized. Participation from the SDHU in particular should be sought as they have significant capacity to address tobacco use within the local area.

This paper outlines the availability of evidence based, effective, youth tobacco cessation programs and the capacity of public health to implement such programming. It is therefore recommended that an examination into the barriers faced by public health professionals (as well as other community health professionals and schools) in the delivery of effective programming be conducted. Furthermore it has been identified that

a local surveillance system relating to youth tobacco cessation does not exist. As Leatherdale & McDonald (2005) note unless programs are widely used, even the most effective program if underutilized will produce little impact at a population health level. It is therefore recommended that a local surveillance system, coordinated through local Public Health be developed and implemented identifying utilization, reach, and impact of various cessation services (particularly within various ethnic and cultural groups). This system will need to draw information from existing youth population surveys, health care practitioner records, and program evaluation. The results of such surveillance system would guide the provision of services and most certainly funding allocation, providing for cost effective programming.

Despite the fact that the regulations regarding ETS have sent a strong message to youth regarding the social norm of not smoking (Albers et al., 2004) youth surveyed in the area have a distorted perception of how many of their peers smoke in their school environment. A couple of factors may lead into this misperception such as social influences as previously identified as well as the lack of enforcement of smoking within designated areas. In order to reduce smoking prevalence among youth is therefore recommended that the local public health unit, (including TEOs, tobacco control specialists, YAA's) in collaboration with schools develop multi-year, coordinated tobacco control plans including environmental supports such as enforcement of SFO Act (with a treatment based focus), and tobacco use denormalization messaging and activities which are coordinated with community activity and messaging.

As the presence of contraband tobacco products has the propensity to be disproportionately utilized by residents in the north (Physicians for a Smoke-Free Canada

2007), and that supply of such products may be facilitated in the CGS through its first nations territories it is recommended that the ministries involved with public health across the province advocate for the development and implementation of a federal/provincial/territorial/municipal strategy to reduce the presence of contraband tobacco products. Collaboration with aboriginal communities on the development and implementation of strategies to address this issue should be sought (DuChene, 2008; “Imperial Tobacco applauds”, 2008).

Public Health Education

Even though mass media campaigns are effective in reducing tobacco use (Fiore et al., 2004) and have the potential to reach large audiences relatively inexpensively (Farrelly et al., 2003) there is a complete lack of media focussing on youth tobacco cessation in the CGS. It is therefore recommended that a youth cessation communication campaign be implemented which has a substantial level of exposure (Farrelly et al., 2003), is targeted (i.e. particularly to females, aboriginals and francophone culture), and has complementary messaging (Farrelly et al., 2003) to those cessation messaged in the community. Messages should focus on three separate streams. First, to help occasional smokers to realize they are smokers and the benefits of quitting (Mermelstein, 2003). Secondly, communication should focus on increasing the awareness of (Leatherdale, 2006) and benefits to utilization of assisted cessation resources (Leatherdale & McDonald, 2007), particularly to females and those with low self-efficacy. Lastly, messages should be based on stages of cessation and focus on motivating youth to progress to preparation and action (Granda-Orive et al. 2004; and Mermelstien, 2003).

Finally, if the above recommendations are not carried out it is speculated that youth within the CGS will continue to struggle to find support for their attempts at cessation. This lack of support will lead to smoking rates continuing to be above provincial averages and disproportionate health care spending costs born by those in the CGS and area. Despite this, it is anticipated that due to the societal shift that has occurred regarding tobacco use, tobacco use will continue to decline within the City. This decline however, will be tempered compared to if the recommendations are implemented.

SUMMARY

Given that tobacco use contributes to a significant degree of morbidity and mortality in our society, strategies to reduce smoking are necessary. Current literature demonstrated an overall need for early intervention prior to the progression to daily smoking. Moreover, the literature noted that effective individual and population based cessation strategies exist however youth have little interest in such cessation services. An examination of youths' needs and demands of youth cessation services in the City of Greater Sudbury supported to some degree previous literature regarding desire for effective cessation services. However additional examination did reveal some willingness to utilize effective services (i.e. physicians) as well as characteristics associated with an increase in desire for such. More importantly findings supported the need for youth to be aware of cessation options to not only increase their self-efficacy related to tobacco cessation but to increase their willingness to utilize evidence based approaches. A gap between the provision of effective youth cessation services and demand for such services was evident. Despite many forces (in particular the OTS) providing for a great capacity

to address tobacco control within the province, and even with the immense local capacity and resource availability to assist in the implementation of youth cessation services, very few youth specific cessation services are provided within the CGS. Recommendations therefore centred upon provision of strategies found within a comprehensive youth tobacco cessation approach at the local level. It is anticipated that if the recommendations are carried out, an increase in demand and utilization of evidence based cessation service will occur thereby improving the overall cessation rates among youth locally.

Lastly, it is quite evident from the recommendations made that public health policy, practice and education are not mutually exclusive and are linked such that each impact on the other. Future public health planning then, in particular at the provincial level as part of the OTS, will need to consider how provincial tobacco control policy impacts public health practice and education surrounding youth tobacco cessation locally and provincially.

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APPENDIX A

List of Acronyms

Acronym	Complete Name or Title
CAMH	Centre for Addiction and Mental Health
CBA	Cognitive Behaviour Approach
CCTC	Canadian Council for Tobacco Control
CDC	Centre for Disease Control and Prevention
CGS	City of Greater Sudbury
CTI	Clinical Tobacco Interventions
ETS	Environmental Tobacco Smoke
JCSH	Joint Consortium for School Health
MHLTC	Ministry of Health and Long Term Care
MHP	Ministry of Health Promotion
MN	Media Network for a Smoke-Free Ontario
NOT	Not on Tobacco
NRT	Nicotine Replacement Therapy
OMA	Ontario Medical Association
OTRU	Ontario Tobacco Research Unit
OTS	Ontario Tobacco Strategy
PTCC	Program Training and Consultation Centre
SHAPES	School Health Action, Planning and Evaluation Systems
SFO	Smoke Free Ontario Strategy
SDHU	Sudbury & District Health Unit
TEO	Tobacco Enforcement Officer
TTM	Trans-theoretical Model
YAA	Youth Action Alliance

APPENDIX B

SHAPES Ontario Smoking Module

SHAPES - Smoking Behaviour

For each question, mark your answer by making a dark pencil mark that fills the circle completely. Fill in only one (1) circle for each question unless the instructions tell you to do something different. This survey is anonymous, so please do not put your name on any of the pages.



Improper Marks

Please



Proper Mark

The name of my school is: _____

1. What grade are you in?

- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

2. How old are you?

- 11 or younger
- 12
- 13
- 14
- 15
- 16
- 17
- 18 or older

3. Are you male or female?

- Male
- Female

4. Does your father (or stepfather or foster father) smoke cigarettes? Think about the father you see the most.

- I have no father
- No, he has never smoked
- No, he has stopped smoking
- Yes, he smokes cigarettes, cigars or a pipe
- I don't know

5. Does your mother (or stepmother or foster mother) smoke cigarettes? Think about the mother you see the most.

- I have no mother
- No, she has never smoked
- No, she has stopped smoking
- Yes, she smokes cigarettes, cigars or a pipe
- I don't know

6. Do any of your older brothers smoke cigarettes?

- Yes
- No
- I don't know
- I don't have any older brothers

7. Do any of your older sisters smoke cigarettes?

- Yes
- No
- I don't know
- I don't have any older sisters

45
44
43
42

8. How many people your age, at your school, do you think smoke cigarettes?

- 91-100%
- 81-90%
- 71-80%
- 61-70%
- 51-60%
- 41-50%
- 31-40%
- 21-30%
- 11-20%
- 0-10%

39
38
37
36
35
34
33
32

9. Since September, how many classes or lectures did you have that talked about cigarette smoking?

- No classes
- 1 or 2 classes
- 3 or 4 classes
- 5 or 6 classes
- 7 or more classes

30
29
28
27
26
25

10. Since September, have you taken part in any other anti-smoking activities or events at your school?

- Yes
- No
- I don't know

24
23
22
21

11. Have you seen or heard any anti-smoking campaigns in the last year?

- Yes
- No
- I don't know

19
18
17
16
15

12. In the last year have you seen or heard any anti-smoking campaigns with the slogan *stupid.ca*?

- Yes
- No
- I don't know

12
11
10

13. If you have heard of *stupid.ca*, did you visit the web site?

- Yes
- No
- I have not heard of *stupid.ca*

9
8
7

PLEASE DO NOT WRITE IN THIS AREA



3

1

62 14. Are you exposed to smoking at your job?
61 Yes
60 No
59 I do not have a job outside of school

58 15. Have you ever been curious about smoking a cigarette?
57 Yes No
56

55 16. Have you ever smoked a cigarette, even just a few puffs?
54 Yes No

52 17. Have you ever smoked a whole cigarette?
51 Yes
50 No
49 I have never smoked
48

47 18. Have you smoked 100 or more whole cigarettes in your life?
46 Yes
45 No
44 I have never smoked
43

41 19. Think about the last 30 days. Did you smoke a cigarette, even just a few puffs?
40 Every day 1 or 2 days
39 Almost every day Not at all
38 Some days
37
36

35 20. Think about the last 30 days. On the days that you smoked, how many cigarettes did you usually smoke?
33 I did not smoke at all
32 A few puffs in a day
31 1-2 cigarettes in a day
30 3-5 cigarettes in a day
29 6-10 cigarettes in a day
28 11-19 cigarettes in a day
27 20 or more cigarettes in a day

24 21. In the last 12 months, how often did you smoke?
23 I have never smoked
22 I have smoked, but not in the last 12 months
21 I have tried one cigarette in the last 12 months
 I have had more than one cigarette in the last 12 months

18 22. Are you a smoker?
17 Yes No

16 23. Do you think in the future you might try smoking cigarettes?
15 I already smoke Probably not
14 Definitely yes Definitely not
13 Probably yes
12
11

10 24. If one of your best friends was to offer you a cigarette, would you smoke it?
9 Definitely yes Probably not
8 Probably yes Definitely not
7

6 25. At any time during the next year do you think that you will smoke a cigarette?
5 Definitely yes Probably not
4 Probably yes Definitely not
3
2
1

26 26. Do you plan to quit smoking cigarettes?
 I have never smoked
 I have only smoked a few times
 I have already quit
 Yes, within one week
 Yes, within 30 days
 Yes, within six months
 Yes, within one year
 Yes, but I'm not sure when
 No, I do not plan to quit smoking

27 27. How long ago did you quit smoking?
 I have never smoked
 I have only smoked a few times
 I am still smoking
 I quit less than 2 weeks ago
 I quit between 2 weeks and 6 months ago
 I quit between 6 months and one year ago
 I quit more than one year ago

28 28. How many times in the past year have you tried to quit smoking?
 I have not smoked in the last year
 I have only smoked a few times in the last year
 I have not tried to quit in the last year
 I have tried to quit once in the last year
 I have tried to quit 2 times in the last year
 I have tried to quit 3 times in the last year
 I have tried to quit 4 or more times in the last year

29 29. How sure are you that you could quit smoking if you wanted to?
 Very sure I do not smoke
 Sure I have only smoked a few times
 Unsure I do not want to quit
 Very unsure

30 30. Your closest friends are the friends you like to spend the most time with. How many of your 5 closest friends smoke cigarettes?
 None 3
 1 4
 2 5

31 31. Is there help available at this school for students who want to quit smoking?
 Yes
 No
 I don't know

32 32. Would you join a program to help you quit smoking if one was offered at your school?
 Yes
 No
 I do not smoke cigarettes anymore
 I have never smoked

33 33. Do you think all public places (e.g., restaurants, malls, arcades, etc.) should be smoke-free?
 Definitely yes Probably not
 Probably yes Definitely not

34. How often do you smoke in each of the following places?

Often Sometimes Never I don't smoke

- | | | | | | |
|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|
| a) At home | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 61 |
| b) Walking to and/or from school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 60 |
| c) At school but off school property | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 59 |
| d) At school on school property | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 58 |
| e) At concerts/dances/clubs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 57 |
| f) In restaurants/coffee shops | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 56 |
| g) At parties | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 55 |
| h) Other: _____ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 54 |

35. How often do you smoke at the following times?

Often Sometimes Never I don't smoke

- | | | | | | |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|
| a) Before school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 50 |
| b) During the school day | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 49 |
| c) After school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 48 |
| d) In the evening | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 47 |
| e) On weekends | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 46 |
| f) Other: _____ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 45 |

36. How often do you smoke with the following people?

Often Sometimes Never I don't smoke

- | | | | | | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|
| a) By myself | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 41 |
| b) With my parents | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 40 |
| c) With other family members | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 39 |
| d) With friends | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 38 |
| e) Other: _____ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 37 |

37. If you were thinking about quitting smoking, rate whether you might use the following ways to quit.

I don't smoke Definitely Maybe Never

- | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|----|
| a) A self-help booklet | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 32 |
| b) Group meetings at school | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 31 |
| c) My doctor | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 30 |
| d) Chat room on the Internet | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 29 |
| e) Information site on the Internet | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 28 |
| f) Teacher, guidance counsellor, or school nurse | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 27 |
| g) Free telephone quit line | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 26 |
| h) Friend's advice | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 25 |
| i) Quit on my own | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 24 |
| j) Nicotine gum or nicotine patch | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 23 |
| k) Other: _____ | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 22 |

38. How strongly do you agree or disagree with each of the following statements?

Strongly Agree Agree Disagree Strongly Disagree

- | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|----|
| a) I feel close to people at my school. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 17 |
| b) I feel I am part of my school. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 16 |
| c) I am happy to be at my school. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 15 |
| d) I feel the teachers at my school treat me fairly. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 14 |
| e) I feel safe in my school. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | 13 |

39. How many students at this school smoke where they are not allowed to?

- A lot A few
 Some None

40. This school has a clear set of rules about smoking for students to follow.

- True False
 Usually true I don't know
 Usually false

41. I often see students smoking near this school.

- True Usually false
 Usually true False

42. If students are caught breaking the smoking rules at this school, they get into trouble.

- True False
 Usually true I don't know
 Usually false

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43. In the last 30 days, how often have you noticed cigarette packs displayed behind the counter at convenience stores, corner stores, or gas stations?

- 60 Never
 59 Sometimes
 58 Always
 57 Haven't been to one of these stores in the last 30 days

44. In the last 30 days, how often have you noticed cigarette packs displayed on the counter at convenience stores, corner stores, or gas stations?

- 52 Never
 51 Sometimes
 50 Always
 49 Haven't been to one of these stores in the last 30 days

45. How tall are you without your shoes on? (Please write your height on the line and then fill in the appropriate numbers for your height in feet and inches OR centimeters.)

"My height is _____"

Example: 5 ft 7in

	Height		OR	Height	
	Feet	Inches		Feet	Inches
38	0	0		0	0
37	1	1		1	1
36	2	2		2	2
35	3	3		3	3
34	4	4		4	4
33	5	5		5	5
32	6	6		6	6
31	7	7		7	7
30		8			8
29		9			9

	Height		
	Centimeters		
	0	0	0
	1	1	1
	2	2	2
	3	3	3
	4	4	4
	5	5	5
	6	6	6
	7	7	7
	8	8	8
	9	9	9

46. How much do you weigh without your shoes on? (Please write your weight on the line and then fill in the appropriate numbers for your weight in pounds OR kilograms.)

"My weight is _____"

Example: 127lbs

	Weight			OR	Weight		
	Pounds				Pounds		Kilograms
15	0	0	0		0	0	0
14	1	1	1		1	1	1
13	2	2	2		2	2	2
12	3	3	3		3	3	3
11	4	4	4		4	4	4
10	5	5	5		5	5	5
9	6	6	6		6	6	6
8	7	7	7		7	7	7
7	8	8	8		8	8	8
6	9	9	9		9	9	9

47. Your closest friends are the friends you like to spend the most time with. How many of your 5 closest friends are physically active?

- None 3
 1 4
 2 5

HARD physical activities are jogging, team sports, fast dancing, jump-rope and any other physical activities that increase your heart rate and make you breathe hard and sweat.

48. Mark how many minutes of **HARD** physical activity you did on each of the last 7 days. This includes physical activity during physical education class, lunch, recess, after school, evenings, and spare time.

For example: if you did 1 hour and 15 minutes of hard activity on Monday, you will need to fill in the 1 hour circle and the 15 minute circle, as shown below:

	Hours					Minutes			
Monday	0	1	2	3	4	0	15	30	45
Monday	0	1	2	3	4	0	15	30	45
Tuesday	0	1	2	3	4	0	15	30	45
Wednesday	0	1	2	3	4	0	15	30	45
Thursday	0	1	2	3	4	0	15	30	45
Friday	0	1	2	3	4	0	15	30	45
Saturday	0	1	2	3	4	0	15	30	45
Sunday	0	1	2	3	4	0	15	30	45

MODERATE physical activities are lower intensity activities such as walking, biking to school, and recreational swimming.

49. Mark how many minutes of **MODERATE** physical activity you did on each of the last 7 days. This includes physical activity during physical education class, lunch, recess, after school, evenings, and spare time.

For example: if you did 2 hours and 45 minutes of moderate activity on Monday, you will need to fill in the 2 hour circle and the 45 minute circle, as shown below:

	Hours					Minutes			
Monday	0	1	2	3	4	0	15	30	45
Monday	0	1	2	3	4	0	15	30	45
Tuesday	0	1	2	3	4	0	15	30	45
Wednesday	0	1	2	3	4	0	15	30	45
Thursday	0	1	2	3	4	0	15	30	45
Friday	0	1	2	3	4	0	15	30	45
Saturday	0	1	2	3	4	0	15	30	45
Sunday	0	1	2	3	4	0	15	30	45

APPENDIX C

**Data Use Agreement**

As part of the SHAPES Ontario project, local public health units are granted access to smoking and physical activity data from their local school boards/schools. The purpose of sharing the data is to assist health units in the targeting, planning and evaluation of school-based tobacco control and physical activity initiatives. In order to ensure the security, confidentiality and appropriate use of the data, health units are to review their relevant responsibilities and requirements for protecting the data as outlined in the following agreement. By signing the data use agreement, health units acknowledge compliance with the following terms.

Terms of Agreement

University of Waterloo's Role:

The University of Waterloo will transmit electronic data sets containing individual records from questionnaires completed in the SHAPES Ontario study. Health units are granted access to these data containing board identifiers and/or school identifiers conditional on receiving school board(s) and school(s) written permission respectively. If permission has not been granted by either the school board(s) or school(s), the health unit has access to aggregate data only that does not contain any board or school identifiers.

Data Use:

- The SHAPES Ontario data will be used for analysis, planning and evaluation purposes only. Any attempt to use the data to identify individuals or identify organizations for purposes other than previously outlined violates the conditions of this agreement.
- The anonymity of individuals, schools and school boards is to be preserved. Any unintended identification of an individual, school or board is to be reported to Steve Manske at the University of Waterloo (manske@healthy.uwaterloo.ca/519-888-4518) immediately.
- All results of data analyses are to be reported in aggregate form. The health unit will not release information where the number of observations in any cell of tabulated data is less than or equal to 5.
- The health unit agrees to not link the data to other sources of information that may lead to potential identification of person(s) and/or organizations.

Data Access & Storage:

- The health unit will use appropriate safeguards to prevent the use or disclosure of the data set other than as permitted by this agreement, including technical and physical safeguards including but not limited to:
 - Electronic data files & reports are to be stored in a secure data base with access limited to relevant personnel.
 - › Hard copies of data & reports are to be stored in a locked location with access limited to relevant personnel.
 - › Reports transferred electronically will be password protected. Data files will be transferred by CD.
- › The electronic (or facsimile) raw data set or subset containing individual observations will not be released or disclosed to any persons not a member of the health unit bound to

this agreement. Reports that preserve the anonymity of individuals and organizations can be released with permission of participating schools/school boards (staff person(s) at schools where data was collected do not require permission). All requests from external person(s)/organization(s) wishing to access the raw data are to be referred to Steve Manske at the University of Waterloo (manske@healthy.uwaterloo.ca/519-888-4518). External person(s)/organization(s) wishing to access the raw data will have to obtain school board(s) and/or the school(s) written permission.

- The number of individuals with access to the data will be restricted to the minimum number necessary to perform activities permitted by this agreement (i.e. analysis, planning and evaluation).
- The parties (UW/health unit) jointly agree that _____ is the custodian of the data on behalf of the health unit. As the custodian of the data, they agree to ensure the security and maintenance of the data set. The custodian will also act as a contact for the agreement on behalf of the health unit. Should the custodian no longer be able to perform these duties, the University of Waterloo will be informed in writing of who will carry on this role, and will have another staff member sign this agreement.
- Electronic data may be retained indefinitely in a secure location.

Acknowledgement of Data Set Source:

- The health unit will acknowledge in all reports/papers based on the data that the source of the data is from SHAPES Ontario, developed by the faculty and staff with the Centre for Behavioural Research and Program Evaluation, a national program of the National Cancer Institute of Canada funded by the Canadian Cancer Society.”
- Should the health unit incorporate analysis from SHAPES Ontario into publications, abstracts or conference papers, an investigator or staff member from the University of Waterloo will be listed as co-author or first author, dependent upon his/her level of involvement in the final product.

The health unit agrees to report any violations of the terms of the agreement, immediately after becoming aware of any use or disclosure of the data.

On behalf of the health unit the undersigned individual agrees to the terms of the agreement.

(Name/Title-Print)

(Organization/Health Unit)

(Signature)

(Date)

The named custodian acknowledges their role as outlined and agrees to comply with the terms of the agreement.

(Name/Title-Print)

(Organization/Health Unit)

(Signature)

(Date)

APPENDIX D

**Permission for Information Release to David Groulx**

One of the objectives of the SHAPES Ontario project is to provide school level data to high schools to assist school-based teams to plan and evaluate their efforts. A second objective of this project is to provide smoking and physical activity data representative at a local public health region level to assist health departments in targeting, planning and evaluation of their efforts with youth.

A local Masters of Public Health Student, David Groulx, has requested the use of local data collected in the SHAPES Ontario project in order to better serve your community. These data include individual school feedback reports, [the board feedback report], and the data set created from the student questionnaires completed in schools within your health region. Individual students cannot be identified in these data; however, schools and boards will be identified for the purpose of informing and planning the actions of the public health unit. Sharing your school's data may result in the development or continuation of a partnership with your local public health unit to assist you in taking action on the findings of the SHAPES Ontario project.

David Groulx agrees to keep all information confidential and in a secure location, and to use it only for planning and evaluation purposes. No information that identifies schools or boards will be released to the public by David Groulx without the written consent of the school(s) and board(s) involved.

This research has been reviewed by and received ethics clearance from the Office of Research Ethics at the University of Waterloo. Should you have any concerns or comments resulting from your participation in this study, please contact Dr. Susan Sykes, Director of Research Ethics at the University of Waterloo at (519) 888-4567 ext. 6005.

If you have any questions or concerns about the use of information, please contact Jessica Reid of the Population Health Research Group at (519)888-4567, ext. 7068, or David Groulx at (705) 522-4433.

For the School[board]:

If the school/board agrees to the use of data collected through the SHAPES Ontario research project as outlined above, a school/board administrator is asked to complete the following:

I, _____, grant permission to the Population Health Research Group to share the feedback report and data set for St. Charles College with David Groulx for the purpose and conditions stated above.

Signature

Date

Witnessed by _____
(Print witness name)

Witness Signature

Date

For the Masters of Public Health student:

I, _____, agree that all information released to myself, David Groulx, from the SHAPES-Ontario study by the Population Health Research Group will remain confidential and in a secure location, and will be used only for planning and evaluation purposes. No information that identifies schools or boards will be released to the public without the written consent of the school(s) and board(s) involved.

Signature

Date

Witnessed by _____
(Print witness name)

Witness Signature

Date

APPENDIX E

Descriptive and Logistic Regression Analysis of SHAPES Ontario Data

Analysis	Question Number and Dependent Variable (categories/grouped or ungrouped)	Question Number & Independent Variable	Literature/evidence
Univariate and Cross Tabs	No. 27 “How long ago did you quit smoking?” (Still smoking & Quit less than 2 weeks ago to quit more than one year ago)	No. 10 “Since September, have you taken part in any other anti-smoking activities or events at your school?” (Yes & No)	Anti- tobacco beliefs is a characteristic that is associated with an increased likelihood of youth quitting smoking (Sussman, 2002).
Univariate and Cross Tabs	No. 27 “How long ago did you quit smoking?” (Still smoking & Quit less than 2 weeks ago to quit more than one year ago)	No. 1 “What grade are you in?” (9,10,11,or 12)	Age (being younger) is a characteristic that is associated with an increased likelihood of youth making a quit attempt or quitting smoking (Sanchez del Mazo, 2005).
Univariate and Cross Tabs	No. 27 “How long ago did you quit smoking?” (Still smoking & Quit less than 2 weeks ago to quit more than one year ago)	No. 33 Do you think all public places should be smoke-free? (Definitely Yes/Probably Yes and Probably not/definitely not)	Antitobacco beliefs is a characteristic that is associated with an increased likelihood of youth quitting smoking (Sussman, 2002).
Univariate and Cross Tabs	No. 27 “How long ago did you quit smoking?” (Still smoking & Quit less than 2 weeks ago to quit more than one year ago)	No.28 “How many times in the past year have you tried to quit smoking?” (not tried, tried once-twice, and tried 3-4 or more times in the past year)	Number of past quit attempts is a predictor of tobacco cessation. The more past quit attempts one has, the greater likelihood that the individual will quit smoking (Zhu et al., 1999).

Univariate and Cross Tabs	No. 22 "Are you a smoker?" (Yes and No)	No. 19 "Think about the last 30 days. Did you smoke a cigarette, even just a few puffs?" (every day/almost every day, some days/one or two days and not at all)	Lack of self-identity as a smoker may lead a teen to dismiss cessation messages as they would not feel that the messages apply to themselves (Mermelstein, 2003).
Univariate and Cross Tabs	No. 22 "Are you a smoker?" (Yes and No)	No. 21 "In the last 12 months, how often did you smoke?" (never smoked/ not in last 12 months, I have tried one cigarette in last 12 months, and I have had more than one cigarette in last 12 months)	Lack of self- identity as a smoker may lead a teen to dismiss cessation messages as they would not feel that the messages apply to themselves (Mermelstein, 2003).
Univariate and Cross Tabs	No. 32 "Would you join a program to help you quit smoking if one was offered at your school?" (yes and No)	No. 29 "How sure are you that you could quit smoking if you wanted to?" (very sure/sure and unsure/very unsure)	Women with high self-efficacy are less likely to participate in cessation programs in comparison with women with low self-efficacy to quit smoking (Hublet, Maes & Csincsak, 2002).
Univariate and Cross Tabs	No. 32 "Would you join a program to help you quit smoking if one was offered at your school?" (yes and No)	No. 3 "Are you male or female?" (male and female)	Gender differences exist with respect to the desire or participation in particular cessation interventions (Balch, 1998; CDC, 2006).
Bivariate	No. 32 "Would you join a program to help you quit smoking if one was offered at your school?" (yes and No)	No. 29 "How sure are you that you could quit smoking if you wanted to?" (very sure/sure and unsure/very unsure) #3 Are you male or female (male and female)	Women with high self-efficacy are less likely to participate in cessation programs in comparison with women with low self-efficacy to quit smoking (Hublet, Maes & Csincsak, 2002).
Univariate and Cross Tabs	No. 37 "If you were thinking of quitting smoking, rate whether you might use the following ways to quit." (b,c,d,f,g,h,j= assisted)	No. 3 "Are you male or female?" (male and female)	Gender differences exist with respect to the desire or participation in particular cessation interventions (Balch, 1998; CDC, 2006).

Univariate and Cross Tabs	No. 37 “If you were thinking of quitting smoking, rate whether you might use the following ways to quit.” (b,c,d,f,g,h,j=assisted)	No. 28 “How many times in the past year have you tried to quit smoking?” (not tried, tried once-twice, and tried 3-4 or more times in the past year)	A majority of adolescents who had tried to quit are more likely to use unassisted quitting methods (CDC, 2006).
Bivariate	No. 37 “If you were thinking of quitting smoking, rate whether you might use the following ways to quit.” (b,c,d,f,g,h,j=assisted)	No. 3 “Are you male or female?” (male and female) No. 28 “How many times in the past year have you tried to quit smoking?” (not tried, tried once-twice, and tried 3-4 or more times in the past year)	Gender differences exist with respect to the desire or participation in particular cessation interventions (Balch, 1998; CDC, 2006). A majority of adolescents who had tried to quit are more likely to use unassisted quitting methods (CDC, 2006).
Univariate and Cross Tabs	No. 37 “If you were thinking of quitting smoking, rate whether you might use the following ways to quit.” (b,c,d,f,g,h,j=assisted)	No. 29 “How sure are you that you could quit smoking if you wanted to?” (very sure/sure and unsure/very unsure)	Self-efficacy has been identified as a variable in ones participation in a group course or self-help materials. Those with low self-efficacy are more likely to participate in group course (Hublet et al., 2002).
Multivariate	No. 37 “If you were thinking of quitting smoking, rate whether you might use the following ways to quit.” (b,c,d,f,g,h,j=assisted)	No. 3 “Are you male or female?” (male and female) No. 28 “How many times in the past year have you tried to quit smoking?” (not tried, tried once-twice, and tried 3-4 or more times in the past year) No. 29 “How sure are you that you could quit smoking if you wanted to?” (very sure/sure and unsure/very unsure).	Gender differences exist with respect to the desire or participation in particular cessation interventions (Balch, 1998; CDC, 2006). A majority of adolescents who had tried to quit are more likely to use unassisted quitting methods (CDC, 2006). Self-efficacy has been identified as a variable in ones participation in a group course or self-help materials. Those with low self-efficacy are more likely to participate in group course (Hublet et al., 2002).

Note. Questions are derived from the SHAPES Ontario smoking module survey and the question numbers correspond to the question numbers of contained within the survey. Categories of questions are grouped to allow for a more representative sample. No. = Number

APPENDIX F

Definition of Terms

Smoking Status

Daily Smoker: has smoked everyday or almost everyday in the 30 days preceding the survey.

Occasional Smoker: has smoked some days or only 1 or 2 days in the 30 days preceding the survey.

Nonsmoker: has smoked fewer than 100 cigarettes in his/her lifetime and has not smoked at all in the last 30 days.

Tobacco Cessation: to discontinue or withdraw from the use of tobacco products.

Self-identification as a smoker: Answered yes to the question “are you a smoker?”.

Self-identification as a non-smoker: Answered no to the question “are you a smoker?”.

Stage of Cessation

Precontemplation: Individual does not plan to quit smoking.

Contemplation: Individual plans to quit in the near future.

Preparation: Individual is committed to making a quit attempt in the near future and has made an attempt in the recent past.

Action: Individual has quit smoking in the recent past and is learning to become a non-smoker.

Maintenance: Individual has quit smoking more than 6 months ago, establishing a new non-smoking habit.

APPENDIX G

Descriptive Statistics

Frequency Tables

Table 1

Gender

Gender	Frequency	Percent
Male	316	53.7%
Female	266	45.2%
Missing	7	1.2%
Total	589	100.0%

Table 2

Smoking Status

Self-Identify as a Smoker	Frequency	Percent
Smoker	133	23.1%
Non-Smoker	442	76.8%
Total	575	100.0%

Table 3

TTM Stage of Cessation

Stage	Frequency	Percent
Precontemplation	11	26.2%
Contemplation	9	21.4%
Preparation	UTR	
Action	6	14.3%
Maintenance	14	33.3%

Note. UTR= Unable to report.

Table 4

Smoking Cessation Status

How Long Ago Did you Quit Smoking	Frequency	Percent
Have never Smoked	147	51.4%
Have only smoked a few times	52	18.2%
Still smoking	62	21.7%
Have quit less than 6 months ago	10	3.5%
Have quit more than 6 months ago	15	5.2%
Total	286	100%

Cross Tabulations

Table 5

Ones Cessation Status in Relation to their Grade Level

Smoking Status		Grade				
		9	10	11	12	Total
Still Smoking	Frequency	14	11	10	26	61
	% within smoking status	23.0%	18.0	16.4%	42.6%	100%
	% within Grade	77.8%	68.8%	62.5%	72.2%	71.0%
Quit	Frequency	UTR	UTR	6	10	25
	% within smoking status	UTR	UTR	24%	40.0%	100%
	% within Grade	UTR	UTR	37.5%	27.8%	29%
Total	Frequency	18	16	16	36	86
	% within smoking status	20.9%	18.6%	18.6%	41.9%	100%
	% within Grade	100%	100%	100%	100%	100%

Note. UTR= Unable to Report

Table 6

Past Quit Attempts and Cessation Status

# Times Tried to Quit in Past Year		Smoking Status		
		Still Smoking	Quit	Total
Not Tried	Frequency	21	UTR	23
	% within # Times Tried	91.3%	UTR	100%
	% within Smoking Status	37.5%	UTR	33.8%
Tried 1-2 Times	Frequency	25	10	35
	% within # Times Tried	71.4%	28.6%	100%
	% within Smoking Status	44.6%	83.3%	51.5%
Tried 3+ Times	Frequency	10	UTR	10
	% within # Times Tried	100%	UTR	100%
	% within Smoking Status	17.9%	UTR	14.7%
Total	Frequency	56	12	68
	% within # Times Tried	82.4%	17.6%	100%
	% within Smoking Status	100%	100%	100%

Note. UTR= Unable to report.

Table 7

Self-identification as a Smoker and Amount Smoked

Self-Identification as a smoker		In Last 30 Days Did You Smoke a Cigarette			
		Everyday/Almost Everyday	Some Days, 1-2 Days	Not at All	Total
Smoker	Frequency	108	23	UTR	133
	% within ID as a Smoker	81.2%	17.3%	UTR	100%
	% within Last 30 days	93.1%	30.3%	UTR	23.3%
Non-Smoker	Frequency	8	53	378	439
	% within ID as a Smoker	1.8%	12.1%	86.1%	100%
	% within Last 30 days	6.9%	69.7%	99.5%	76.7%
Total	Frequency	116	76	380	572
	% within ID as a Smoker	20.3%	13.3%	66.4%	100%
	% within Last 30 days	100%	100%	100%	100%

Note. UTR= Unable to report.

Logistic Regressions

Table 8

Association of Multiple Factors with Students Cessation Status

Factor	P-value	OR	95% CI
Taken part in antismoking activities or events			
No		1	
Yes	0.56	1.92	0.211, 17.50
Grade			
12		1	
11	0.49	0.64	0.18, 2.23
10	0.80	0.85	0.23, 3.06
9	0.66	1.35	0.36, 5.09
Think all public places should be smoke-free			
Yes		1	
No	.004	9.471	2.05, 43.69

Note. P-value is the probability value. OR= Odds Ratio. CI= confidence interval.