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A Toolkit to Assist Massachusetts School Nurses Start Elementary School Substance Use Prevention Education Programs

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A Toolkit To Assist Massachusetts School Nurses Start

Elementary School Substance Use Prevention Education Programs

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Abstract

Purpose: Massachusetts currently only mandates fifth-twelfth grade substance use prevention. Literature states it is counter productive to wait until the adolescent years to initiate substance use prevention due to the adolescent developmental stage of social conformity. Starting evidence-based substance use prevention education in early elementary school will arm children with the knowledge and confidence they need to make healthy choices and reduce future high school drug rates.

Methods: A toolkit was created to assist Massachusetts elementary school nurses to start a substance use prevention program in their schools/districts. The toolkit was presented and evaluated in January 2018 by the Massachusetts school nurse leaders that attended the five regional school nurse leader meetings. A pre- and post-presentation survey was distributed to 192 school nurse leaders to ascertain if the toolkit was helpful.

Results: Out of the 351 school nurse leaders in the Commonwealth, 192 attended the five meetings, 160 completed surveys, and 39 wrote comments. With survey results and written feedback from 11% of Massachusetts school nurse leaders (39 out of 351), the toolkit was edited and improved. The final toolkit was posted February 2018 to the Boston University School Health Institute for Education and Leadership Development website with the endorsement of the Massachusetts Department of Public Health.

Conclusion: Survey analysis revealed that the toolkit presentation increased school nurse leaders' likelihood of starting an early elementary school substance use prevention program (average mean increase of .825 on a 1-4 Likert Scale).

Keywords: Elementary school substance use prevention

A Toolkit To Assist Massachusetts School Nurses Start

Elementary School Substance Use Prevention Education Programs

Introduction

Massachusetts's elementary schools do not currently offer substance use prevention education (SUPE). SUPE traditionally starts in middle school. Healthy People 2020 set a goal of increasing SUPE programs in elementary schools (Office of Disease Prevention and Health Promotion [ODPHP], 2010). School nurses are trained in delivering health education, but these health professionals run busy school clinics and may not have the spare time or money to develop new initiatives. A toolkit to assist Massachusetts elementary school nurses is likely to increase the percentage of elementary schools offering SUPE.

Background

In the last 30 years, the United States has seen an influx of people chronically using substances. The largest public health issue in the United States is substance use disorders (The National Center on Addiction and Substance Abuse [NCASA], 2011; National Institutes of Health [NIH], 2016). Schools have responded by starting SUPE programs (Beets & Flay, 2009; Fertman & Primack, 2009; Hanley et al., 2010; Hansen, 2010). These programs are traditionally introduced in middle school (Hansen, 2010). The age of middle school was not selected on any type of theory or statistical data, rather it was selected because high school students have already started using substances (Hecht et al., 2008; Little, Pokhrel, Sussman, & Rohrbach, 2015). A trending public health topic is SUPE in early elementary school aged children (Hansen, 2010; Norton, 2008; Parker, Kupersmidt, Mathis, Scull, & Sims, 2014; Ringwalt, Hecht, & Hopfer, 2010). The theory is that this age group is more permeable to information and less influenced by

their peers than middle school aged children (Botven & Griffin, 2007; Hansen, 2010; Hanley et

al., 2010, Hopfer et al., 2010; Stephens et al., 2009; Vincus, Ringwalt, Harris, & Shamblem,

2009). Healthy People 2020 set the goal of increasing the percentage of SUPE programs in

elementary schools to 89% (ODPHP, 2010). The state of Ohio has already mandated that all

Kindergarten students start receiving annual SUPE (Ohio Committee on Drug Use Prevention

Education [OCDUPE], 2017). This capstone project acted as an intervention towards the

Healthy People 2020 goal within the state of Massachusetts.

Massachusetts is experiencing an opioid, alcohol and marijuana crisis. The

Massachusetts Department of Public Health (MDPH) data reports that between 2012 and 2014

there was a 65% increase in unintentional opioid related deaths (MDPH, January 2016). The

spike may even be higher than reported, as many overdoses get categorized as suicides or

poisonings, not unintentional overdoses (MDPH, January 2016). The MDPH estimates as many

as 10% of unintentional overdoses through 1999-2013 were categorized as suicides (MDPH,

May 2016). Even with the misclassification, Massachusetts overdose deaths are 3.4 times higher

than deaths caused by motor vehicle accidents (MDPH, May 2016). According to the Centers

for Disease Control and Prevention (CDC) Sortable Risk Factors and Health Indicators,

Massachusetts rate of drug poisoning deaths in 2014 was 19 in 1,000 deaths (CDC, 2016). This

is well above the national average of 14.7 in 1,000 deaths (CDC, 2016). According to the Youth

Risk Behavior Surveillance System (YRBSS), Massachusetts also has the second highest rate of

youth marijuana use in the country after New Mexico (CDC, 2015). While the Massachusetts

youth binge-drinking rate is aligned with the national average, the adult binge-drinking rate is

well above the national average (CDC, 2016; CDC, 2015). This is a preventable epidemic, as

only 10% of people who start drinking at age 21 become a chronic user, while 40% of children

who start drinking before age 15 become a chronic user (World Health Organization [WHO], 2011). SUPE aims to delay the onset of drinking which can substantially decrease the number of adult chronic users in the population (Botven & Griffin, 2007; Holtz & Twomby, 2007; Lewis & Hession, 2012; WHO, 2011).

The current target population for SUPE in the United States is middle school aged children (Anderson & Moore, 2009; Fertman & Primack, 2009; Vincus et al., 2010). The evidence shows that this age is too late to be effective (Norton, 2008; O'Neil, Clark, & Jones, 2011; Ringwalt et al., 2010; Snyder et al., 2013). The psychosocial development of a middle school age child is preoccupied with peer approval and the weight of peer influence is much stronger than anything offered in a SUPE program (Norton, 2008; O'Neil et al., 2010; Ringwalt et al., 2010; Snyder et al., 2013). The elementary school aged population has been studied for over a decade, and evidence shows it is the most effective age to influence attitudes towards tobacco, alcohol and other hazardous substances (Collins, Abadi, Johnson, Shamblem & Thompson, 2010; Hopfer et al., 2011; Norton, 2008; O'Neil et al., 2010; Ringwalt et al., 2010; Snyder et al., 2013).

Currently, the gold standard of substance use prevention education in the United States is the D.A.R.E. program (Anderson & Moore, 2009; Fertman & Primack, 2009; Vincus et al., 2010). The D.A.R.E. program involves uniformed police officers attending schools and delivering the SUPE. The D.A.R.E. program is police officers sharing their experiences and knowledge about drugs in the criminal justice system. Evidence-based literature has stated that this type of SUPE is ineffective because the message is *don't use drugs or you will go to jail* (Substance Abuse and Mental Health Services Administration [SAMHSA], 2016). Jail has been

an ineffective societal deterrence of drug use, as evidenced by the large number of chronic

substance users in the criminal justice system (SAMHSA, 2016).

Students may also be prejudiced against police officers based on their life experiences.

Police officers are present when Children and Family Services removes children from their

home, families are evicted from their apartments/homes, domestic violence situations, serving

warrants, and arresting perpetrators. Due to the traumatic nature of these events it is

understandable why some children may not respond well to a police officer. It is common

knowledge in our culture that police officers are not universally respected. This would cause an

individual to shut out information offered by the police officer, perhaps even having the opposite

impulse just to undermine the authority of the police officer. Evidence-based curricula does not

include police officers, as research shows that aligning deterrence of substance use with criminal

consequences is not effective (Little et al., 2015; Ringwalt et al., 2010; Stephens et al., 2009;

Tymes, Outlaw & Hamilton, 2016; Mueller, 2011). Using police officers in SUPE has created a

health inequity for the children who've had past traumatic experiences with law enforcement.

Some literature has presented the idea of of uniformed Firefighters/Paramedics in their SUPE

programs. This method of community involvement has proved to be effective in aligning with

health concepts of evidence-based SUPE, without any known adverse effects (Stephens et al.,

2009); however, more substancial research should be done.

Evidence-based literature states that elementary school SUPE should be based on facts

and anatomy (Holtz & Twomby, 2007; Lewis & Hession, 2012; Kupersmidt, Scull & Austin,

2010; Norton, 2008; Ringwalt et al., 2010; Sale, Weil & Kryah, 2012; Scull, Kupersmidt &

Erausquin, 2014), and that prevention education should be started as soon as children understand

how their body works, which is Kindergarten. In other words, if children understand that eating

too many cookies makes them overweight, they're ready to start SUPE.

Schools interested in starting SUPE programs are mandated by the Board of Education

and the Department of Education and Secondary Education (DESE) to select curricula from the

National Registry of Evidence-Based Programs and Practices (NREPP) on the Substance Abuse

and Mental Health Services Administration (SAMHSA) website. Until recently, the SAMHSA

database was considered by many as a middle-upper class, white, suburban resource (Johnson,

Shemblen, Ogilvie, Collins & Saylor, 2009; Hecht et al., 2008; Sale et al., 2012). This was due

to the long, drawn out curricula approval process that most schools could not afford (Johnson et

al., 2009; Hecht et al., 2008; Sale et al., 2012). After opposition statements in scholarly

literature, SAMHSA has drastically changed and simplified the approval process. And has also

started to classify programs by participant demographics (urban, rural, Mexican-American,

Alaskan Native, etc.). This change from only accepting universal curricula to accepting and

providing a large variety of appropriate curricula for all demographics of students will improve

the likelihood of schools adopting SUPE programs in elementary schools. SAMHSA deserves

recognition for their efforts to eliminate perceived classist inequities and institutionalized racism.

However, to date SAMHSA still has not approved any elementary school SUPE programs.

Problem Statement

Lack of education about hazardous substances (alcohol, tobacco, drugs) in elementary

schools has proved to translate into high-risk behaviors in middle and high school students.

Preventative education would deter high-risk behaviors, however, school nurses and school

health programs lack the resources and funding to implement evidence-based preventative

education programs.

A toolkit created and customized for Massachusetts elementary school nurses will assist in developing SUPE programs. The toolkit was developed after interviewing multiple elementary school nurses and the contents reflects their needs. The toolkit addresses obstacles reported by school nurses. This includes grant information to reduce financial stress, letters to parents and administrators, talking points to help explain the program to parents, and theory-based curricula. In January 2018 the DNP student presented the toolkit at five regional school nurse leader meetings. The school nurse leaders evaluated the toolkit and the DNP made improvments before implementation. The toolkit was disseminated to all the elementary school nurses in the Commonwealth via email from the MDPH in February 2018. The Boston University School Health Institute for Education and Leadership Development (BU SHIELD) also posted the toolkit on their website. This toolkit will alleviate barriers that elementary school nurses face when attempting to develop a SUPE program. It will potentially save hours of research and will put funding opportunities at school nurses' fingertips.

Organizational "Gap" Analysis of Project Site

Informal interviews by the DNP student with Massachusetts elementary school nurses from Belmont, Framingham, Hudson, Hadley, Marlborough, Haverill, Billerica, Plymouth, Stoughton, Springfield, Ware and Natick led to the uncovering of some major barriers to starting elementary school SUPE programs. School nurses reported some administrators are the gatekeepers of what is and is not taught in schools. Some principals believe that elementary school SUPE is inappropriate for the age group. In addition to administrators, some guidance counselors, school psychologists, teachers and parents may also feel that the topic is inappropriate for elementary school age children. However, in an independent population assessment performed by the DNP student on 150 Massachusetts third graders from Belmont and

Framingham, 97% knew a lit cigarette was hazardous, 90% knew an alcohol was hazardous, but only 29% knew a bottle of pharmaceuticals could potentially be hazardous. This data validates that on some level children are already obtaining some knowledge about substance use. However, if a comprehensive, theory-based SUPE program was initiated, perhaps more children would know the potential risks of pharmaceutical drugs. The data show that children are already aware of substance use issues but are lacking the concrete information on complex issues, such as pharmaceutical drugs, which can help one person and potentially harm another. Considering the statistics on Massachusetts opioid deaths, this is concerning. The DNP student hopes that by providing school nurses scholarly literature, talking points, and data, a conversation can be started at schools that convinces these opponents that elementary school SUPE programs are appropriate and necessary to combat chronic substance use in the Commonwealth.

Elementary school nurses interviewed by the DNP student also reported that time and financing were major deterrents of starting any prevention education program. The school health clinic must be covered by a substitute school nurse anytime the school nurse is planning or delivering an education program in a classroom. A substitute school nurse costs the district money and some districts simply cannot afford this cost. This has created a health inequity in Massachusetts where school nurses from affluent districts are able to initiate education programs, and school nurses from disadvantaged districts are unable to do so. The DNP student addresses funding by providing substantial information on available grants to offset costs. The Stoughton elementary school nurse reported to the DNP student that Stoughton, Massachusetts received a large state grant to initiate its elementary school SUPE program. The grant money made the program possible. Needham, Massachusetts also received the same state grant but the town decided against using it to initiate SUPE programs. Needham is using the money to increase

funding for substance use treatment. The DNP student gave a presentation to all school nurse leaders in November 2016. The Needham school nurse leader whom was in attendance was not even aware that the town of Needham received this state grant money. The DNP student created a grant resource page in the toolkit that lists the towns that are already receiving state grant money from the District Attorney's Office. This may allow school nurses to simply ask for a portion of the grant rather than having to apply for a grant themselves. The toolkits grant section also has creative solutions to funding like Whole Foods Profit Share Days and Brooks Brother's auction donation.

Review of the Literature

Search Process

The Cumulative Index to Nursing and Allied Health Literature (CINAHL) database was searched with search terms *substance use* and *prevention education*, yielding 60 results. Within CINAHL limiters of publishing date after 2007, children aged six to twelve and geography of the United States narrowed results to four. Two were manually excluded due to relevance.

The Education Resources Information Center (ERIC) database was searched with search terms *drug abuse* and *prevention education* with 269 results. Substance use was originally searched but drug abuse yielded more results in ERIC. Limiters of publishing date after 2007, and elementary school education were applied leaving two articles. One article was manually excluded due to duplication.

The Psychological Information (PsycINFO) database was searched with search terms *substance use* and *prevention education* with 341 results. Limiters of publication date after 2007, the English language and school aged children between six to twelve years old were applied and produced 16 results. An additional limiter of source type of academic journal

excluded a dissertation and book leaving 14 scholarly articles. Two were excluded due to duplication. Four articles were manually excluded because they were not from the United States. Six were manually excluded due to relevance. Two articles from PsycINFO were included.

The Web of Science database was searched using the search term *substance use prevention education*, which led to 784 results. Limiters of publication date after to 2007, the English language, geography of United States, and source type as a journal or review left 445 results. The 445 results were searched with the term *elementary school*, which yielded 14 results. Ten articles were manually excluded due to relevance, and four articles were duplicates. No new articles were used from The Web of Science database.

The ProQuest database was searched using the search terms *substance use* and *prevention education* yielding 15,012 results. Limiters of publication date between 2007 and 2016, source type as scholarly journals, geography as United States, language as English, subjects as children and youth narrowed to 48 results. All 48 articles were manually excluded due to relevance. No articles were included from the ProQuest database.

The GALE database was searched using the search terms *substance use* and *prevention education* with 20 results. The limiter of elementary school students was applied and narrowed the search to two articles. One was manually excluded due to duplication and one due to relevance. No articles were used from the GALE database.

PubMed database was searched using the search terms *substance use* and *prevention education* in the title/abstract with 1,361 results. Limiters of publishing date in the last ten years, the English language and children ages six to twelve years old narrowed the search to 52 articles. An additional limiter of randomized controlled trials narrowed the search to five. Four articles were manually excluded due to relevance. One article was included in the review.

The Cochrane library Medical Subject Headings (MeSH) was searched with terms *substance abuse, substance use, alcohol abuse, alcohol abstinence, tobacco smoking, cannabis use, cannabis smoking,* and *smoking prevention* with no relevant decision tree findings relating to substance use prevention education in elementary school aged children. Although no relevant MeSH were identified, The Cochrane Library did have 21 trials, 20 of which were manually excluded due to relevance, subject age or duplication. One trial was included in this literature review.

In total 25 articles were included for this review. Generally, the 25 articles are from the last five years. Some of the selected studies are from 2007, 2008, 2009, 2010, and 2011. There are limited published studies on substance use prevention education in elementary school students. These studies were the first of their kind and are considered hallmark papers. For that reason, they were included as references. The contents in these papers have also caused a change in government policy in the SAMHSA database. This important triumph in government policy also supports including them as references.

Evidence Rating

The selected articles range from Level I-Level IV evidence using the Johns Hopkins Nursing Evidence-Based Practice Rating Scale (JHNEBP) (Newhouse, 2005). The quality of evidence ranges from high to good using the JHNEBP scale (Newhouse, 2005).   The types of studies in the articles are two randomized controlled trials, fourteen quasi-experimental (matched-pair, cohort, cluster, empirical, longitudinal), five non-experimental qualitative, one systematic review, two case studies, and two organizational experiences.

Substance Use Prevention Education Programs

Some authors believed only at risk groups should be targeted with elementary school SUPE programs (Johnson et al., 2009; Sale et al., 2012; Snyder et al., 2013). While other authors believe SUPE should be initiated universally, in all elementary schools, regardless of socioeconomic risk factors (Hecht et al., 2008; Kurpersmidt et al., 2010; O'Neill et al., 2011; Scull et al., 2014). Johnson et al. (2009) believe elementary school SUPE programs should be targeting at risk populations and target a specific substance. Their study on Alaskan natives using inhalants embodies this belief (Johnson et al., 2009), while Hecht et al. (2008), Kupersmidt et al. (2010), O'Neil et al. (2011), and Scull et al. (2014) believe that substance use is an equally distributed epidemic in all socioeconomic groups. Therefore, prevention education should be equally distributed throughout the nation (Hecht et al., 2008; Kurpersmidt et al., 2010; O'Neill et al., 2011; Scull et al., 2014). The YRBSS supports this finding that substance use is equally distributed across all socioeconomic groups. However, there are parts of the country that suffer from higher rates of specific types of drug use (CDC, 2016). Refer to Table A for the CDC Sortable Risk Factors and Health Indicators to compare drug use state by state. The disproportionate use of specific drugs in one area may lead some authors to believe that their geographical area is at higher risk and in need of more prevention education than other parts of the country with lower rates of use of that specific drug. Thorough analysis of the data reveals that neither camp is wrong or right. But their divide does represent a need to disseminate public health data more widely. Particularly in schools for which SUPE programs are being advocated. Public health data can help these school districts move forward with evidence-based prevention programs. This DNP student included this lesson in the toolkit by providing relevant public health data to elementary school nurses.

Table A

CDC: Sortable Risk Factors and Health Indicators (2016)

State	Youth Tobacco	Youth Binge Drinking	Youth Marijuana
National Average	10.8%	17.7%	21.7%
Massachusetts	7.7%	17.7%	24.5%
Florida	9.9%	15.3%	21.5%
Oklahoma	13.1%	16.5%	17.5%
California	7.7%	15.1%	22.9%
Alaska	11.1%	12.5%	19%
Hawaii	9.7%	13.4%	19.4%
West Virginia	18.8%	19.8%	16.5%
Montana	13.1%	20.7%	19.5%

SAMHSA Database

Another contrast in the literature is whether or not to use a curriculum from the

SAMHSA database. Some of the authors' studies were designed to use as evidence of

effectiveness for the NREPP approval process with the goal of having their curriculum added to

the SAMHSA database. This includes Kurpersmidt et al.'s (2010) Media Detective online

education, Sale et al. (2012), and Johnson et al.'s (2009) PREP program, and O'Neil et al.'s

(2011) Michigan Model of Health. These authors all commented on the substantial amount of

personal time that was not reimbursed to get their findings published and through the NREPP

approval process. Additionally, Hecht et al. (2008) believes and presents substantial evidence

that SAMSHA was not looking at cultural components when approving curricula. Hecht et al. (2008) used the SAMHSA approved middle school curriculum *Keepin' It Real* which is adapted for elementary school students. Hecht et al. (2008) sample was 1,566 Phoenix fifth graders. Of these 1,566 students, 75% were Mexican-American and 87% were receiving the federal free lunch program (Hecht et al., 2008). Hecht et al. (2008) proved *Keepin' It Real's* effectiveness promoted by NREPP and SAMHSA could not be replicated in the elementary school population for various cultural reasons. At the time Hecht published this finding, SAMHSA was only accepting curricula acceptable for the general population. Hecht et al. (2008) argues that given the country's diversity, SAMHSA cannot not possibly define what is and is not effective for all populations with one universal database. And Hecht et al. (2008) argued that local educators have a better idea of what will be effective than the large governing body of the NREPP and SAMHSA.

Last year, SAMHSA changed its curricula approval process and is accepting a wider range of curricula from all populations. SAMHSA also added categories for its curricula, which is sorted by demographics. For example, an educator from a farm town in Arizona can now search "rural" and "Mexican-American," and find curricula that fits his/her population. The experts in the field were ominous about SAMHSA's database collection and organization. In response, SAMHSA has updated their approval process and database organization. This is an example of how scholarly articles can influence outcomes. Public health policies and interventions must continually be reevaluated and updated to align with evidence-based research and best practice from scholarly articles in order to ensure that they meet the needs of the population they serve. Unfortunitly, SAMHSA has not yet approved an elementary school SUPE.

Synthesis

The literature agrees that elementary school is an appropriate, evidence-based age for starting SUPE (Hecht et al., 2008; Johnson et al., 2009; Kurpersmidt et al., 2010; O'Neill et al., 2011; Sale et al., 2012; Scull et al., 2014; Snyder et al., 2013), and that waiting until middle school is risky due to the age groups' influence of their peers' opinions (Hecht et al., 2008; Johnson et al., 2009; Kurpersmidt et al., 2010; O'Neill et al., 2011; Sale et al., 2012; Scull et al., 2014; Snyder et al., 2013). This is in contrast to the traditional initiation of middle school SUPE.

The literature also agrees that adhering to health facts and anatomy is the most appropriate and effective teaching method for this age group (Hecht et al., 2008; Johnson et al., 2009; Kurpersmidt et al., 2010; O'Neill et al., 2011; Sale et al., 2012; Scull et al., 2014; Snyder et al., 2013). The complex concepts of getting 'high', addiction, specific drugs and criminal consequences are not effective or appropriate for this age group (Hecht et al., 2008; Johnson et al., 2009; Kurpersmidt et al., 2010; O'Neill et al., 2011; Sale et al., 2012; Scull et al., 2014; Snyder et al., 2013). This DNP student adhered to evidence-based curricula recommendations when constructing talking points documents for a toolkit. If the school nurse has read a brief talking points document including information like this, then he/she will be armed for controversial conversations with skeptical opponents. If the skeptic believes the education is inappropriate, the toolkit can prepare the school nurse to answer accordingly with evidence-based recommendations. Difficult conversations can end harmoniously agreeing that the concepts of addiction and getting 'high' are inappropriate, but health facts based on anatomy are appropriate. Having conversations like this in elementary schools is the first step in starting SUPE programs so children will receive the information they need to help them make healthy choices in the future.

Evidence Based Practice: Verification of Chosen Option

Based on the available literature, a presentation and toolkit will serve as the best quality improvement project option for initiating SUPE programs in Massachusetts's elementary schools. Analysis of qualitative interviews with Massachusetts elementary school nurses affirm that a diverse toolkit will provide creative freedom to make the best choices for their school districts. Qualitative interviews also revealed a toolkit that provided one curriculum would not meet the individual needs of Massachusetts school districts. Based on these findings a toolkit with a multitude of options for the diverse geographical demographics of the Commonwealth was best practice. To align with DESE regulations, the toolkits curricula will be considered a pilot program, that which require data collect on outcomes.

<p align="center">**Theoretical Framework/Evidence Based Practice Model**</p>

The RE-AIM framework was used in this capstone project. RE-AIM is an acronym that stands for reach, effectiveness, adoption, implementation and maintenance, and therefore, the steps that will frame this project. RE-AIM is a highly regarded and widely used public health framework (Gaglio, Shoup, & Glasgow, 2013). RE-AIM is already being used successfully as a framework for starting elementary school health prevention programs (Gaglio et al., 2013; Larsen et al., 2017).

The DNP student used the RE-AIM framework to enrich the quality and public health impact of the toolkit. The RE-AIM framework has ensured that the DNP student created interventions that reach the intended target population effectively. This framework helped guide the DNP student to the intervention of a toolkit because it can be adopted consistently, at a low cost, throughout the Commonwealth. The DNP student originally wanted to help one district initiate a SUPE program; however, this project would be inconsistent with the underpinnings of

the RE-AIM framework, as it would not have reached the whole intended population. Also, once

the DNP student was finished, the maintenance of the one program would be unknown. The

toolkit ensures that school nurses have the resources to perform maintenance over time. The

capstone project truly embodies the underpinnings of RE-AIM because it provides tools and

resources to facilitate the implementation of elementary school SUPE programs throughout the

Commonwealth. Refer to Table B for RE-AIM framework application.

Table B

RE-AIM Framework Toolkit Application

Reach	The MDPH and BU SHIELD were the centralized training organizations for Massachusetts school nurses. Disseminating the toolkit through the MDPH and BU SHIELD ensured access to for every elementary school in the Commonwealth.
Effectiveness	Conducting qualitative interviews with Massachusetts school nurses guided the toolkit contents to meet the diverse needs of the population. The toolkit was effective based on the concepts of the RE-AIM framework by ensuring the stakeholders' opinions were considered and their needs were identified and met.
Adoption	A toolkit was a necessary intervention following the RE-AIM framework because the population required multiple tools and resources to implement a curriculum. This toolkit organized many different resources in one place, which ensures that Massachusetts elementary school nurses have everything they need to adopt a SUPE program.
Implementation	The RE-AIM framework emphasizes consistency and cost effective interventions to ensure implementation. The toolkit fits this well as the cost is free and it will be distributed statewide.
Maintenance	The DNP student has given permission for BU SHIELD to add to the toolkit as evidence-based practice evolves.

Goals, Objectives and Expected Outcomes

This public health topic is controversial in Massachusetts elementary schools. Many people do not believe that this is an appropriate topic to be discussing with young children. The intention of the toolkit was to give elementary school nurses resources to start a conversation with parents and administrators in their schools, find funding, and potentially start a SUPE program in the future. It is unpractical to think that this toolkit will immediately lead to an increased number of elementary school SUPE programs within the evaluation timeframe of this capstone project.

The toolkit outcomes was measured at the five regional school nurse leader meetings scheduled in January 2018. The DNP student conducted a pre-intervention survey on all school nurse leaders in attendance at the regional meetings before presenting the toolkit. The toolkit was presented in a 20-60 minutes timeframe, depending on the meeting. The school nurse leaders in attendance then completed a post-intervention survey. The DNP student collected the surveys by hand at the end of the presentation. The surveys from all five meetings were computed together in SPSS to make one database. The pre- and post-surveys used a Likert Scale with a one to four rating option. Each question on the pre- and post-survey was analyzed individually with a paired t-test. The following statements were expected outcomes:

- At least 10 percent of all Massachusetts school nurse leaders will attend the DNP student's presentation at the regional meetings in January 2018.

- At least 50 percent of school nurse leader meeting attendees will fill out pre- and post-presentation survey.

- The pre- and post-survey data will be analyzed in SPSS with a paired t-test on each of the three survey questions.

- An increase of at least 25 percent on all three questions mean differences will reflect improvement of their knowledge of resources, self-efficacy and likelihood of starting a SUPE program.

- A paired t-test will be run for each survey question to reject the null hypothesis that the toolkit had no effect and accept the alternative hypothesis that the toolkit was helpful. Negative or null results on any of the three survey questions will equate to not meeting the expected outcomes of the capstone project.

Project Design

This capstone project was an integrative review with a presentation and toolkit. The toolkit was intended to assist elementary school nurses initiating theory-based SUPE programs. The toolkit was assembled based on the results of qualitative interviews conducted by the DNP student with elementary school nurses in the Commonwealth. The toolkit contains many resources: links to grants, sample letters to parents, public health data, scholarly literature, talking points, and links to curricula. This is a practical intervention to increase the number of elementary school SUPE programs in Massachusetts because school nurses are consistently reporting that they lack the financial resources, educational resources and time to construct a program from scratch. This toolkit will facilitate SUPE program initiation by providing school nurses with the resources they lack in compliance with the RE-AIM framework.

Project Site and Population

This project took place at the MDPH and throughout the Commonwealth at various elementary schools and presentation auditoriums (hospitals, health centers, universities, etc.). The DNP student did not receive any funding for the toolkit from MDPH or from any outside source. The DNP student completed all the work on the toolkit.

The toolkit was emailed to all elementary school nurses (n = 1,143) in the

Commonwealth by the DNP student's preceptor, the MDPH's Director of Health Services.

Before implementation, the DNP student presented the toolkit at five regional meetings with 192

school nurse leaders in attendance. The Commonwealth has a total of 351 school nurse leaders.

Setting facilitators and barriers. A potential barrier at the MDPH was the lack of

funding and resources. MDPH has limits on the availability of photocopy machines, paper and

other office supplies, and MDPH does not have Wi-Fi connection. All employees use desktop

computers with ethernet cables. To overcome this barrier, all work on this project was

completed on the DNP student's personal computer and on a home Wi-Fi connection.

There was a potential for parents, teachers, and administrators to become aware of the

toolkits dissemination and prohibit its use in their schools. The toolkit maintained a transparent

and succinct message in order to avoid being stigmatized as a substance use treatment program.

The education in the toolkit was designed to prevent future substance use, not treat existing

substance use issues.

The elementary school nurses in Massachusetts facilitated the creation of the toolkit by

being available for consultation. The DNP student held informal, qualitative interviews at

twelve Massachusetts elementary schools in a variety of socioeconomic and regional areas

(Stoughton, Framingham, Belmont, Hudson, Marlborough, Billerica, Hadley, Plymouth,

Haverill, Springfield, Ware, and Natick). The interviews were all conducted in person at the

school nurses' health clinics between October 2016 and June 2017. The DNP student utilized

school nurse consultations as a major influence on the contents and format of the toolkit.

Including school nurses in the process promoted its use and created a facilitator in the project.

Implementation Plan/Procedures

The first step of the project was the construction of the toolkit. The second step was attending the five regional school nurse leader meetings. This was an important step because these school nurse leaders influenced the elementary school nurses in their districts to utilize the toolkit. Executing a captivating and convincing presentation at all five regional school nurse leader meetings was essential to the success of the project. The third step was conducting a pre-intervention survey prior to the presentation, and a post-intervention survey after the presentations. Analyzing the data was the fourth step of the project. The DNP student entered the data in SPSS® and ran descriptive statistics to compute mean differences, paired t-tests for each survey question. The fifth step was the maintenance of the toolkit based on the evaluations. In addition, BU SHIELD and MDPH were given the rights to the toolkit to make changes in the future. And finally, the dissemination of the toolkit via email and posting the toolkit on the BU SHIELD website was completed. These steps follow the RE-AIM framework with ensures the projects reach, effectiveness, adoption, implementation and maintenance.

Measurement Instrument

An anonymous pre- and post-presentation paper survey was developed by the DNP student to evaluate outcomes. After all the data were collected on the two-sided paper surveys the data were entered into SPSS. Each survey question pre- and post- answers was entered as scale dependent variables. The surveys' meeting location was added as a nominal dependent variables. The numbers 1-160 were used as identification variables. SPSS computed paired *t*-tests for each question, descriptive statistics for all survey answers, and mean differences. See Appendix A to view the two-sided survey.

Data Collection Procedure

The DNP student was responsible for all data collection and analysis. There were two primary sets of data collected during the project. The first were unstructured, informal, open-ended, qualitative interviews with twelve Massachusetts elementary school nurses. The second data set was the outcomes of the pre- and post-presentation survey.

The twelve qualitative interviews were coordinated via email by the DNP student and the individual school nurses. The interviews lasted one to six hours depending on the level of interest of the individual school nurse. Information gathered helped the DNP student decide what contents belong in the toolkit. The DNP student used both phenomenological study design and ethnographical study design to guide the interviews.

The second set of data was an anonymous, two-sided, pre- and post-presentation survey. The data collected from the pre- and post-survey is in the form of an ordinal, discrete questionnaire using the Likert Scale with a one to four rating. The DNP student distributed and collected the surveys in person directly before and after the presentation.

Data Analysis

The unstructured open-ended interviews were analyzed by the DNP student in order to select the best resources for the toolkit. At these interviews the DNP student presented curricula and toolkit formatting options to the school nurses. The DNP student also explored the attitudes of the school nurse, teachers, parents, guidance counselors, administrators and school committees - specifically, if the school nurse thought that SUPE is appropriate for their students. The DNP student also explored if other school professionals, parents and the school committee share a similar attitude. This information was interpreted to construct letters and talking points supported by scholarly literature. There was no formal analysis of interviews other than using it

as guidance. This guidance was necessary to align with the RE-AIM framework because the

school nurses are the end-users of the toolkit and collecting their opinions ensures the projects

reach, effectiveness, adoption, implementation and maintenance.

The anonymous pre- and post-presentation survey was used to measure if the project met

expected outcomes. The surveys questions combined paired differences mean must show at least

a 25 percent increase on a one-four Likert Scale to meet the expected outcome. In addition,

paired *t*-tests of the three individual survey questions must each reject the null hypothesis that the

toolkit had no effect and therefore accept the alternative hypothesis that the toolkit was helpful.

This was interpreted as it is likely the toolkit and presentation improved the knowledge of

resources for, improved self-efficacy in, and increased likelihood of, implementing an early

elementary school SUPE program.

Results

The expected outcome that at least 10 percent of all Massachusetts school nurse leaders

would attend the toolkit presentations was achieved at 55 percent with 192 attendees out of the

351 total. The expected outcome that at least 50 percent of meeting attendees would fill out a

survey was achieved at 84 percent with 160 surveys filled out of 192 attendees.

The survey questions combined paired differences mean was 0.825. The outcome was

met with a 27.5 percent increase in the paired differences mean on a one to four Likert Scale

(2.492 to 3.367).   For SPSS syntax and output of paired differences mean see Appendix B.

Each survey questions paired *t*-test was found to be statistically significant at a 95 percent

confidence interval. This outcome was met. See Table C for consolidated mean differences and

paired *t*-test results. See Appendix C for *t*-test results SPSS syntax and output.

Table C

Consolidated Mean Differences and Paired t-tests Results

Question		Means 1-4 Likert Scale	Paired Differences Mean	Significance paired *t*-test
1	Pre-Survey	2.673	.8491	.000 (4.085E-30)
	Post-Survey	3.522		
2	Pre-Survey	2.387	.8616	.000 (1.395E-33)
	Post-Survey	3.248		
3	Pre-Survey	2.417	.7643	.000 (1.321E-23)
	Post-Survey	3.182		

Discussion

The 27.5 percent increase in paired differences mean on a one to four Likert Scale can be interpreted as increasing school nurse leaders' likelihood of initiating a SUPE program from below average (2) to about average (3). This outcome is crucial in determining if the toolkit was successful. An error that the DNP made was the one to four Likert Scale labels (very low, below average, about average, above average). Very few surveys had a one rating (very low). This scale was weighted downward, and it should have been weighted upward (below average, about average, above average, expert). This change could have captured a more accurate picture, as most people would never quantify their knowledge as very low.

The three survey questions individual paired *t*-tests each rejected the null hypothesis that the toolkit had no effect; and therefore accepted the alternative hypothesis that the toolkit was effective. This would be interpreted that it is likely the toolkit and presentation improved the knowledge of resources, improved self-efficacy and increased likelihood of a school nurse leader implanting a SUPE program in their district.

Cost-Benefit Analysis/Budget

This project required the time of the DNP student. Constructing the toolkit required the DNP student's personal computer and internet access. The DNP student also added significant mileage on her car from driving across the state to conduct qualitative interviews, as well as traveling to each regional school nurse leader meeting. The cost of gasoline was tabulated in the total expenses. The cost-benefit analysis is in Appendix D.

Timeline

The DNP student made the toolkit from September 2017 through December 2017. In January 2018, the DNP student attended all five Massachusetts regional school nurse leader meetings. Analysis of the pre- and post-presentation surveys was completed in February 2018. The final write-up of the project was completed April 2018. Refer to Appendix E for a detailed timeline.

Ethical Considerations/Protection of Human Subjects

The UMass Amherst Internal Review Board (IRB) approved the capstone project prior to the DNP student constructing the toolkit. See Appendix F to view the official IRB Determination Form.

UMass Amherst IRB required the DNP student to handout a consent form to all participants at the presentations. See Appendix G to view the consent form. The consent form contents was verbally explained to participants prior to the start of the presentation when being asked to fill out the pre-presentation survey. Participants were given an option to leave prior to the start of the presentation. Participants were given the option to not fill out a survey. The participants were all informed of the presentation in advance via email in meeting agendas. See Appendix H for the Metrowest meeting agenda. See Appendix I for the Southeast meeting

agenda. See Appendix J for the Northeast meeting agenda. See Appendix K for the Central

meeting agenda. See Appendix L for the West meeting agenda.

Conclusion

The United States and the Commonwealth of Massachusetts are facing a substance use

epidemic (CDC, 2015; NIH, 2016). The current middle school SUPE program model is not

working as evidenced by the high rate of substance use in the Commonwealth (CDC, 2016;

CDC, 2015; MDPH, 2016; MDPH, 2016). Evidence-based practice promotes initiating SUPE in

elementary school (Norton, 2008; O'Neil et al., 2010; Ringwalt et al., 2010; Snyder et al., 2013).

This age is critical before the social development of the child matures and is more influenced by

peers than new information delivered by adults (Norton, 2008; O'Neil et al., 2010; Ringwalt et

al., 2010; Snyder et al., 2013). Getting to children before this pivotal development change is

essential to combatting the substance use epidemic. Giving elementary school nurses the

resources they need to start these programs is a public health priority, and also contributes

toward accomplishing a Healthy People 2020 goal (ODPHP, 2016). A toolkit provided

Massachusetts elementary school nurses with the resources they need to start a conversation at

their school, apply for grant funding, and start a SUPE program in the future. The toolkit is

located in Appendix M.

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Appendix A: Evaluation Survey

**DNP Capstone Project: A Toolkit To Assist
Massachusetts Elementary School Nurses In Starting
Substance Use Prevention Education Programs**

Caitlin Pettengill, BSN, RN, DNP Candidate
University of Massachusetts – Amherst
(Region) School Nurse Leader Meeting
(Date of Meeting)

SIDE A
Pre-Presentation Survey

For the following questions please circle an answer on a scale of 1-4

1: Below Average   2: About Average   3: Higher Than Average   4: Very High

1) What is your level of knowledge in identifying and obtaining resources, information and curricula for substance use prevention education programs?

<div align="center">

1   2   3   4

</div>

2) What is your level of self-efficacy in implementing in a substance use prevention education program?

<div align="center">

1   2   3   4

</div>

3) What is the likelihood that you will start a substance use prevention education program with the current resources and funding available to you?

<div align="center">

1   2   3   4

</div>

**DNP Capstone Project: A Toolkit To Assist
Massachusetts Elementary School Nurses In Starting**

Substance Use Prevention Education Programs

Caitlin Pettengill, BSN, RN, DNP Candidate
University of Massachusetts – Amherst
(Region) School Nurse Leader Meeting
(Date of Meeting)

SIDE B

Post-Presentation Survey

For the following questions please circle an answer on a scale of 1-4

1: Below Average   2: About Average   3: Higher Than Average   4: Very High

1) What is your level of knowledge in identifying and obtaining resources, information and curricula for substance use prevention education programs?

<div align="center">

1   2   3   4

</div>

2) What is your level of self-efficacy in implementing in a substance use prevention education program?

<div align="center">

1   2   3   4

</div>

3) What is the likelihood that you will start a substance use prevention education program with the current resources and funding available to you?

<div align="center">

1   2   3   4

</div>

Appendix B: Paired Sample Statistics

```
GET
  FILE='/Users/CaitlinPettengill/Documents/Biostatistics/Toolkit Surveys.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
T-TEST PAIRS=BQ1 BQ2 BQ3 WITH AQ1 AQ2 AQ3 (PAIRED)
  /CRITERIA=CI(.9500)
  /MISSING=ANALYSIS.
```

T-Test

[DataSet1] /Users/CaitlinPettengill/Documents/Biostatistics/Toolkit Surveys.sav

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post-Presentation Survey Question 1	3.522	159	.5522	.0438
	Pre-Presentation Survey Question 1	2.673	159	.7115	.0564
Pair 2	Post-Presentation Survey Question 2	3.248	159	.6029	.0478
	Pre-Presentation Survey Question 2	2.387	159	.7092	.0562
Pair 3	Post-Presentation Survey Question 3	3.182	157	.7827	.0625
	Pre-Presentation Survey Question 3	2.417	157	.9538	.0761

Appendix C: Paired t-test Results

```
GET
  FILE='/Users/CaitlinPettengill/Documents/Biostatistics/Toolkit Surveys.sav'.
DATASET NAME DataSet1 WINDOW=FRONT.
T-TEST PAIRS=BQ1 BQ2 BQ3 WITH AQ1 AQ2 AQ3 (PAIRED)
  /CRITERIA=CI(.9500)
  /MISSING=ANALYSIS.
```

T-Test

[DataSet1] /Users/CaitlinPettengill/Documents/Biostatistics/Toolkit Surveys.sav

Paired Samples Test

| | | Paired Differences | | | | | | | |
| | | | | | 95% Confidence Interval of the Difference | | | | |
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig.
Pair 1	Post-Question 1 – Pre-Question 1	.8491	.7521	.060	.7312	.9669	14.235	158	.000
Pair 2	Post- Question 2 – Pre- Question 2	.8616	.7002	.056	.7520	.9713	15.518	158	.000
Pair 3	Post-Question 3 – Pre-Question 3	.7643	.8057	.064	.6373	.8914	11.886	156	.000

Appendix D: Cost-Benefit Analysis

Cost	Benefit
DNP student driving across the state to meet with stakeholders and attend meetings Meetings + Driving = 9 hours 9 Hours x 5 Meetings = 45 Hours $50/hour x 45 hours = $2,250 total Round Trip Mileage on DNP Students Personal Car for all five Regional Meetings West: 180 miles Central: 110 miles Metro West: 10 miles North East: 80 miles South East: 70 miles Total Miles = 450 miles $0.54/mile x 450 miles = $243	-Meeting with stakeholders across the Commonwealth ensures a diverse imprint on project. -Attending meetings in all 5 regions ensures that all school nurses leaders inform the elementary school nurses in their regions to open and explore the toolkit and think about initiating program.
Printing 300 Surveys x $0.10/sheet = $30	-Printing the surveys instead of sending via email results in higher completion rates.
Total Cost to DNP Student = $2,523	-All elementary school students in the Commonwealth will have early substance use prevention education

Appendix E: Timeline for Goals and Objectives

September 2016- June 2017	Conduct face-to-face interviews with twelve elementary school nurses
February-May 2017	Write & submit proposal drafts 1 & 2
June-August 2017	Write & submit proposal drafts 3 & 4
August 2017	Submit UMass IRB Form
September 2017	Proposal approval
September-December 2017	Complete toolkit
January 2018	Attend all 5 regional school nurse leader meetings to present toolkit & complete evaluation surveys
February 2018	Analyze survey data in SPSS, make changes to toolkit and disseminate final toolkit via email and posted on BU SHIELD website
March-April 2018	Make graphs in SPSS and complete capstone project write-up

Appendix F: Determination of Human Subject Research Form

Determination of Human Subject Research

Human Research Protection Office

The UMass Amherst IRB is required to review and approve all research involving human subjects. This application helps determine if your project involves human subject research as defined by federal regulations.

INSTRUCTIONS for INVESTIGATORS:

1. **If investigator is faculty,** complete this form in its entirety and submit with any applicable survey instruments or questionnaires via email attachment to the Human Research Protection Office at humansubjects@ora.umass.edu
   If investigator is a student, forward completed application to your Faculty Sponsor for review and approval. The Faculty Sponsor then submits the form to the IRB via email with his or her endorsement of the project or activity.
2. The UMass Amherst IRB will determine whether your research needs additional IRB review and notify you with a Memorandum of determination in an email attachment.
3. Do **NOT** begin data collection prior to receiving IRB determination.
4. If you have any question or need further instructions, please visit our website or phone us at 413-545-3428.

INVESTIGATOR INFORMATION	
Investigator Name: Caitlin Pettengill	Faculty Sponsor (if applicable): Dr. Black
Title: Graduate Student	Title: Associate Professor
Department: Nursing	Department: Nursing
Email: cmcavanaugh@umass.edu	Email: tblack@umass.edu

PROJECT INFORMATION
Project Title: A Toolkit to Start Substance Use Prevention Education in Massachusetts Elementary Schools

Is project supported by external funding?

⊠ No

☐ Pending * Please identify your anticipated funding source:

☐ Yes * Please identify your funding source:

 * If funded, provide copy of grant proposal with this form.

State the purpose of the project and what you hope to learn:

A toolkit will be created with evidence-based curricula, pre-populated grant proposals,

letters to parents and a PowerPoint presentation for school committee meetings, to assist an

elementary school nurse in starting a substance use prevention education program at their

school. It is expected this proposal will provide greater insight into the needs of the

Massachusetts area school nurses on this topic as well as provide a resource for all to use on

substance use prevention education.

Describe all project procedures including any data collection activities, methodological

designs and plans for analysis:

The toolkit will be presented in the Spring of 2018 at the five regional MA Dept. of Public

Health School Nurse Leaders meetings. After presenting the toolkit to the Nurse Leaders I

will pass out an anonymous, paper survey to evaluate if the Nurse Leaders think the toolkit

will be helpful in starting an education program, getting funding and starting a conversation.

Describe the participant population (age range, gender, ethnic background, type of

participant such as student, faculty, health care professionals, etc.), an approximate

number of participants, and the location where the project will take place :

The participant population is master degree prepared Registered Nurses employed by their

districts as School Nurse Leaders. The School Nurse Leader role acts as a liaison between

the Dept. of Public health and all school nurses in the district. They have the experience

and educational background to listen to my toolkit presentation, and decide if it is effective.

There is one nurse leader for almost every school district in the state. There will be about

30-40 nurse leaders at each of the five regional meetings (West, Southeast, Central,

Metrowest, Northeast). Ages range from 26-70 years old. The gender distribution in the

nursing profession is mostly female, which is true of the participant population. And the

ethnic backgrounds are consistent with the population of the Commonwealth.

NOTE: Please include copies of any project proposals (e.g. Honors or MA Theses, DNP projects, Dissertation Prospectus, etc.) AND surveys/questionnaires, interview questions, etc. with this form.

Instructions: Complete Section A as applicable to determine if activities in which you will be engaged meet the definition of human subject research.

SECTION A: Activities Determined by the UMass Amherst IRB not to Represent

Human Subject Research

1. ☐ **Course-Related Activities:** The project is limited to course-related activities designed for educational or teaching purposes where data is collected as part of a routine class exercise or assignment and is **not intended** for use outside of the classroom. However, if students practice research methodologies on human being, they should still be instructed in the ethical conduct of such activities and be advised to obtain informed consent from their practice subjects.

NOTE: IRB approval **is** required if a student is involved in an activity designed to teach

research methodologies **and** the instructor or student wishes to conduct further

investigation and analyses in order to contribute to scholarly knowledge.

2. ☐ **Oral History:** The project is limited to oral history activities, such as open ended interviews, that only document a specific historical event or the experiences of individuals without the intent to draw conclusions or generalize findings.

NOTE: IRB approval is required when the oral history activities are intended to produce

generalizable conclusions (e.g., that serve as data collection intended to test economic, sociological, or anthropological models/theories).

3. ☐ **Journalism/Documentary Activities:** The activities are limited to investigations and interviews that focus on specific events, views, etc., and that lead to publication in any medium (including electronic), documentary production, or are part of training that is explicitly linked to journalism. There is no intent to test a hypothesis.

NOTE: IRB approval may be required when journalists conduct activities normally considered scientific research intended to produce generalizable knowledge (e.g., systematic research, surveys, and/or interviews that are intended to test theories or develop models).

4. ☐ **Information-gathering interviews:** The activity focuses exclusively on interviewing or surveying participants about his or her expert knowledge about products or policies rather than people or their thoughts regarding themselves (e.g. interviewing city planners about new state regulations on mixed-use construction zones).

NOTE: Interview questions will need to be reviewed by the HRPO. If the activity involves collecting demographic information about participants it may require IRB approval.

5. ☐ **Case Report:** The project consists of a case report or series which describes an interesting treatment, presentation, or outcome. A critical component is that nothing was done to the patient(s) with prior "research" intent.

6. ☒ **Program evaluation /Quality Improvement/Quality Assurance Activities:** The activity is conducted to assess, analyze, critique, and improve current processes within the institutional setting to include projects designed to improve current processes involving health care delivery in the institutional setting. The intent is not to generate conclusions that can be applied universally outside of the immediate environment where the project occurred.
    a. ☒ The activity does not involve randomization into different treatment groups.
    b. ☒ The activity is not designed to be applied to populations beyond the specific study population.

Note: Quality improvement projects are designed to improve the performance of any

practice in relation to an established standard. **Quality assurance** projects are activities

that are designed to determine if aspects of any practice are in line with established

standards. Service surveys issued or completed by University personnel for the purposes

of improving University services/programs or for developing new services or programs

for student, employees or alumni may fall into this category. Investigators who plan to

conduct a QI/QA project, should ensure that they have receive approval from any

applicable committees within their department or the site in which the activity will occur.

7. ☐ **Evidence Based Practice Intervention:** The project or activity is designed to use

best available evidence to make patient care decisions. The project is focused

exclusively on translating evidence and applying it to clinical decision-making to

improve health care delivery, i.e. it is designed to close the gap between research being

conducted and the practice.

Note: "Practice" refers to interventions that are designed solely to enhance the well-

being of an individual patient or client and that have a reasonable expectation of success.

8. ☐ **Public Use Datasets:** The project is limited to analyzing de-identified data

contained within a publicly available dataset. Public use data sets (such as portions of

U.S. Census data, data from the National Center for Educational Statistics, General Social

Survey, Bureau of Labor Statistics, etc.) are data sets prepared with the intent of making

them available for the public and not individually identifiable, therefore their analysis

would not involve human subjects.

NOTE: IRB review is required if the publicly available data set contains identifiers, or if the
merging of multiple data sets might result in identification of subjects. In both cases, Exempt
Category #4 may apply.

9. ☐ **De-Identified Private Information or Human Biological Specimen:** The

project is limited to the use of existing de-identified private information and/or

human biological specimens (hereafter referred to as "specimens"). IRB Approval

is not required if you can confirm the following:

a. ☐ The private information or specimens were not collected specifically for the currently proposed research project through an interaction or intervention with living individuals; **and**

b. ☐ The investigator can confirm that the use of the private information or specimens is not in violation of the terms of use under which the information or specimens were collected; **and**

c. ☐ The investigator will only receive information or specimens that are fully de-identified. De-identified means that the materials to be studied are devoid of any identifying information (names, SSN, DOB, PHI, etc.) and any codes that would enable linkage of the information or specimens to individual identifiers do not exist.

NOTE: To be considered de-identified, nobody, including individuals who are not involved in the conduct of the project, should be able to link the information or specimens back to identifiers.

10. ☐ **Coded Private Information and/or Human Biological Specimens:** The project is limited to the use of existing coded private information and/or human biological specimens (hereafter referred to as "specimens"). IRB Approval is not required if all of the following conditions apply to the project:

a. ☐ The private information or specimens were not collected specifically for the currently proposed research project through an interaction or intervention with living individuals; **and**

b. ☐ The investigator(s) cannot readily ascertain the identity of the individual(s) to whom the coded private information or specimens pertain because for example the specimen provider has agreed not to release the key to the code.

NOTE: If a contractual agreement or Data Use Agreement is required in order to gain access to the information, typically agreements are signed by university officials and not individual researchers. Please provide a copy of any contractual agreement/DUA with your submission.

11. ☐ **Decedents:** The project involves research that is limited to death records,

autopsy materials, or cadaver specimens. If the project involves the use and/or

collection of Protected Health Information (PHI), HIPAA regulations apply to decedent

research.

NOTE: This exception may not be available for decedent Information that contains

Psychotherapy notes or Information relating to HIV, mental health, genetic testing, or

drug or alcohol abuse.

***********************End of Section A**

IMPORTANT: If your activity does not fall into the categories described in Section A, continue to Section B to assess whether your activity is defined as research per regulations. NOTE: If your project falls under FDA regulations, please call our office at 413-545-3428.

Section B. Activities Defined as Research and Subject to Review by the UMass Amherst IRB
1. Is the activity RESEARCH: a systematic investigation designed to contribute to generalizable knowledge? TIP: If the activity is characterized by a plan that incorporates data collection, either quantitative or qualitative, and data analysis to answer a question AND the intent of the investigation is to generate conclusions that can be applied outside of the immediate environment where the investigation occurred, then the activity meets the definition of research. *If you plan on presenting findings at a professional conference or publishing your results in an academic journal, your project may meet the definition of generalizable.* If you have questions about this, please contact our office at 413.545.3428. ☐ Yes, Go to #2   ☐ No, IRB review is not required
2. Does the research involve obtaining information about LIVING individuals? ☐ Yes, Go to #3   ☐ No, IRB review is not required
3. Does the research involve collecting data through <u>intervention</u> (i.e., physical procedures or manipulation of the environment) or <u>interaction</u> (i.e., communication or interpersonal contact between investigator and person) with the individuals? ☐ Yes, IRB review required.   ☐ No, Go to #4
4. Does the research involve collecting identifiable information (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information)? ☐ Yes, Go to #5   ☐ No, IRB review is not required
5. Is the information <u>private</u>? (About behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, or provided for specific purposes by an individual and which the individual can reasonably expect will not be made public) ☐ Yes, IRB review required   ☐ No, IRB review is not required

Section C. Investigator Responsibilities and Assurances

- I certify that the information provided in this determination form and in all attachments is complete and accurate.
- I understand that I have ultimate responsibility for the protection of the rights and welfare of human participants and for the ethical conduct of this activity.
- I certify that the proposed project has not yet been done, is not currently underway, and will not begin until IRB determination and/or approval has been obtained.

Investigator Signature

Name: Caitlin Pettengill	Date: September 30, 2017

HRPO USE ONLY

☐ **Project does NOT need IRB review.** Date: _____ Initials: _____	☐ **Project DOES need IRB review.** Date: _____ Initials _____
(HRPO use only) Determination based on the following rationale:	

Appendix G: Consent Form

Consent Form for Participation in a Research Study
University of Massachusetts Amherst

Researcher: Caitlin Pettengill
Study Title: DNP Capstone Project: A Toolkit To Assist Massachusetts
Elementary School Nurses In Starting Substance Use Prevention
Education Programs
Faculty Sponsor Contact Information: Terrie Black, tblack@umass.edu

1. WHAT IS THIS FORM?
This form is called a Consent Form. It will give you information about the study so you can make an informed decision about participation in this research.

2. WHO IS ELIGIBLE TO PARTICIPATE?
Subjects must be at least 18 years old to participate. Must be a registered nurse in the state of Massachusetts, and a School Nurse Leader in their district.

3. WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this research study is to evaluate if the presented toolkit will be effective.

4. WHERE WILL THE STUDY TAKE PLACE AND HOW LONG WILL IT LAST?
The survey will be conducted at the five Regional School Nurse Leader meetings. It will be completed by February 2018.

5. WHAT WILL I BE ASKED TO DO?
If you agree to take part in this study, you will be asked to complete a pre-presentation survey. Listen to the presentation on the toolkit. Then complete the post-presentation survey.

6. WHAT ARE MY BENEFITS OF BEING IN THIS STUDY?
Your participation ensures that the toolkit will be effective in assisting school nurses in starting substance use prevention education programs. The feedback from the surveys can be used to improve the toolkit before it is circulated.

7. WHAT ARE MY RISKS OF BEING IN THIS STUDY?
We believe there are no known risks associated with this research study; however, a possible inconvenience may be the time it takes to complete the study.

8. HOW WILL MY PERSONAL INFORMATION BE PROTECTED?
The surveys are anonymous with no personal information.

9. WILL I RECEIVE ANY PAYMENT FOR TAKING PART IN THE STUDY?
There is no compensation for participating in this study.

10. WHAT IF I HAVE QUESTIONS?
Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the researcher, Caitlin Pettengill, cmcavanaugh@umass.edu. If you have any questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

11. CAN I STOP BEING IN THE STUDY?
You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate.

12. WHAT IF I AM INJURED?
The University of Massachusetts does not have a program for compensating subjects for injury or complications related to human subjects research, but the study personnel will assist you in getting treatment.

Appendix H: Toolkit

Access to live toolkit (with working links):

Direct link to toolkit (PDF)

https://d2rw76b9nsxu2w.cloudfront.net/nodes/1171/A_Toolkit_To_Start_Substance_Use_Prevention_In_Elementary_Schools.pdf

Link to Boston University SHIELD website to access toolkit

http://bucme.org/node/1171#5

A TOOLKIT TO START SUBSTANCE USE PREVENTION IN ELEMENTARY SCHOOLS

2018 Caitlin Pettengill, BSN, RN

Table of Contents

INTRODUCTION

THE PURPOSE OF THE TOOLKIT

This toolkit is designed to assist school nurses, school nurse leaders, health teachers, science teachers and physical education teachers in starting substance use prevention education in early elementary school. Who uses the toolkit will depend largely on the funding and professional job descriptions of your district.

The toolkit is meant to be an all-inclusive guide for implementing a substance use prevention education program at your school. There is information on current research, grants, curricula, and talking points to lead discussions in your schools. The toolkit is intended to endorse the use of the curriculum *Brain Power!* from the National Institute of Health. The *Generation Rx* curriculum is meant to supplement the *Brain Power!* curriculum with games and activities about safe prescription drug use. And the social-emotional health curriculum, *PAX Good Behavior Game*, is also suggested for use because it assists with the vulnerable population of girls with low self-esteem. Research shows that even with early substance use prevention education, this special population needs additional support in order to avoid drug use in high school.
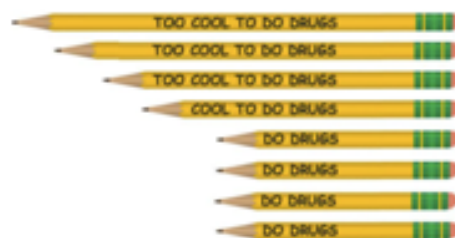
DESE RECOMMENDATIONS

The only substance use prevention education programs recommended by the Massachusetts Department of Education and Secondary Education (DESE) for use in schools are found in the Substance Abuse and Mental Health Services Administration (SAMHSA) database. But SAMHSA's National Registry of Evidence-Based Programs and Practices (NREPP) currently only offers substance use prevention curricula starting in fourth grade. If you use curricula in this toolkit treat it as a pilot study.

STATEWIDE STUDY

The creator of this toolkit will be conducting a statewide longitudinal study on the effects of high school students drug use when substance use prevention education is started in Kindergarten or first grade. If your school or district decides to start an elementary school substance use prevention education program in the 2019-2021 school years, please email cmcavanaugh@umass.edu to get involved in the study.

D.A.R.E. is not an evidence-based program, and it's not in the SAMHSA NREPP database.

TOO COOL TO DO DRUGS
TOO COOL TO DO DRUGS
TOO COOL TO DO DRUGS
COOL TO DO DRUGS
DO DRUGS
DO DRUGS
DO DRUGS
DO DRUGS

WHY ELEMENTARY SCHOOL AGED CHILDREN?

Current research demonstrates that early prevention education is the only effective deterrence of substance use in high school students. For decades society has relied on programs that are not evidence-based and delayed implementation until middle school. The cost of this non-research driven decision has been catastrophic to our communities and society at large. *Implementing evidence-based curricula in early elementary school will reduce the impact of the opioid epidemic in future generations.* Research shows that starting structured in-school substance use prevention education in Kindergarten is best practice, supported by ongoing booster education in first, second and third grade. Once children start being influenced by their peers (fourth-fifth grade) prevention education starts to lose its effect in deterring substance use in high school. This is why waiting until middle school is simply no longer an option.

> **"Soon after teaching our children to cross the street, it's time to start protecting them from substance use."**
> — Massachusetts Department of Public Health, Bureau of Substance Abuse Services

STARTING THE CONVERSATION

TALKING TO ADMINISTRATORS

Informed administrators will be grateful the school nurse is interested in starting an early elementary school substance use prevention education program. This is a hot issue in school administration. More traditional administrators may need some persuasion. The important points to discuss with them are bulleted below:

- **States are starting to enforce Kindergarten through 12th grade substance use prevention education.** Check out this document of recommendations from the Ohio Attorney General, Ohio State Senate and House of Representatives. To highlight the important parts, Ohio is recommending that evidence-based substance use prevention education start in kindergarten. They mention a school district that is successfully integrated NIH's *Brain Power!* into their science curriculum. They also mention the other two curriculums' provided in this toolkit, *Generation Rx* and *PAX Good Behavior Game*. Ohio did an analysis of the costs savings of providing substance use prevention education, and concluded that it was an economically sound investment to save money in the future.

- **Waiting until 4th or 5th grade misses the once-in-a-lifetime window of opportunity to prevent chronic substance use.** This is accomplished by teaching young children about their bodies, and the affects different substances have on their bodies. Specifically, the brain and all of its neurotransmitters. Once little girls start brushing their own hair it's too late, and the window of opportunity is lost.

- Make sure your administrators understand that there are two options when it comes to substance use prevention education. *The old way* (D.A.R.E. in middle and high school) and *the evidence-based way* (K-12 curricula). Stress the fact that some states, like Kentucky and Arkansas, are rejecting research, and decided to keep D.A.R.E. for middle school and high school prevention. These states are experiencing the biggest prescription drug epidemic this country has ever seen. The "same old" way of delivering substance use prevention education does not work. Give your administrator the two scholarly research articles in the Research section that show that D.A.R.E. doesn't work. And show them all the evidence that early elementary school prevention does work.

> **"Substance use prevention education should start in Kindergarten."** –Ohio Attorney General, Mike DeWine

TALKING TO CO-WORKERS

This is a difficult group to convince in some cases. And with just cause, talking to young children about substance use will be difficult.

Curricula are designed to keep lessons clear, concise and to the point. Lessons are tailored to the age of the children and introduced in a manor to enlighten students about their bodies, not the societal issues. **If an elementary school teacher does a unit on human anatomy, no matter how basic, it's actually evidence-based substance use prevention education.**

Every moment we spend educating children about their bodies, and the effects of toxins in their bodies, is time invested in preventing future drug use. In early elementary school aged children you aren't even required to mention drugs. Simply teaching a unit on the lungs, and explaining what smoke does to the lungs is enough. Later in their education specific toxins can be mentioned (cigarettes, joints, etc.).

Additionally, lessons on social-emotional health have been proven to provide protective factors to future drug use. A program like *PAX Good Behavior Game* never mentions drugs, but does contribute toward preventing high school drug use.

SUSBTANCE USE PREVENTION EDUCATION IN EARLY ELEMENTARY SCHOOLS DOES NOT HAVE TO INCLUDE DRUG TOPICS – ESPECIALLY IF IT IS THE ONLY BARRIER IN STAFF BUY-IN!!

How classroom teachers (not doing the formal curricula teaching) should handle questions from students:

- Be honest and clear with your answers.
- Don't make references to personal consequences, police officers and the criminal justice system.
- Relate questions to basic human anatomy and how it affects the body.
- It's okay to say, "I'm not sure, I'll ask the nurse and get back to you."

TALKING TO PARENTS

This maybe the most difficult group to convince. And be aware that you will most likely not have the buy-in of every parent. The author of this toolkit talked to dozens of Massachusetts Elementary School Nurses about this topic. A few of their recommendations:

- When sending home letters to parents have an opt-out box, not an opt-in box.
- Have a saved, generic email in the school office ready to be sent out to parents voicing concerns. The email should include references to scholarly literature, and outline the evidence-based curriculum your school has selected. List a contact for further information.
- Have a school "point person" for parents to be directed to on this topic. The "point person" should have access to scholarly literature and be aware of recommendations and practices in Massachusetts and around the country. Most likely this is a school nurse, administrator, health teacher, physical education teacher or science teacher.
- Reinforce to parents the importance of continuing the conversation at home. And if they choose to opt-out, having a conversation at home.
- Try to win the support of the PTA/PTO before the planning begins.

> **"The only way to end this epidemic is to start substance use prevention education in Kindergarten, it's the only intervention with any evidence to show it works."** –Former Presidential Candidate, Governor of Ohio, John Kasich

TALKING TO STUDENTS

Students know more than you think about alcohol and drugs. The author of this toolkit performed a study on 150 Massachusetts third graders. Over 95% were aware that alcohol and cigarettes are dangerous. While only 68% knew prescription drugs could be dangerous. It's important to close the gaps in knowledge and discuss these issues with our children.

Some elementary school students have already experimented with drugs and alcohol. While others have witnessed their parents, spouses or family friends misuse drugs and alcohol. Some may have seen the effects of alcohol and drugs in their neighborhoods. And other students may have no prior experience or exposure to drugs and alcohol at all.

An issue with the D.A.R.E. program is that it assumes that every child will respect the opinion of a Police Officer. It's important to remember that children bring their own experiences to the classroom. Some children have experienced a traumatic event involving a Police Officer. Maybe they were removed from their home with a DCF worker and a Police Officer. Or maybe they were evicted from their family home by a Police Officer. Perhaps they witnessed a family member, family friend or neighbor being physically apprehended by a Police Officer. When we ignore this reality it creates health inequities in substance use prevention education.

If administrators or parents in your district insist on having uniformed individuals present for substance use prevention education programs select a **Paramedic Firefighter**. A Paramedic Firefighter has firsthand experience of the effects of alcohol and drugs on HEALTH, which can be useful in supporting evidence-based curricula. And doesn't create health inequities.

THE MONEY

FEDERAL GRANTS

1) **Title**: Multi-Site Studies for System-Level Implementation of Substance Use Prevention and Treatment Services
   Source: National Institute of Health (NIH) — see www.grants.gov #PAR-18-222
   Award: $500,000
   Summary: This grant is looking for an entire school district to make a system wide substance use prevention education intervention and then study the long-term effects. Nurse Leaders take notice!

2) **Title**: Brooks Brothers Grant
   Source: Brooks Brothers Corporate
   Award: $5,000 - $1,000,000
   Summary: Brooks Brothers will make a charitable donation to a fund raising event in your district. Simple visit the website above and fill out the one page document. You will receive determination within two weeks. They are specifically looking to donate to an existing fund raising event (auction, raffle, bake sale, walkathon, run, etc.).

3) **Title**: Ford Foundation Grants
   Source: The Ford Foundation
   Award: $5,000-$1,000,000
   Summary: Fill out a short online form and hear back from Ford Corporate within 45 days. Ford has seven domains for grants. The Youth Opportunity and Learning domain would be the most appropriate for public schools. They are looking for holistic, inclusive education policies and practices that provide young people with the skills they need to strive.

4) **Title**: CVS Community Grant
   Source: CVS Corporate; Email andrea.frey@cvshealth.com
   Award: Full Funding of Program
   Summary: CVS offers full funding of educational programs that prevent prescription drug abuse. The grants are invitation only. Email Andrea Frey a short description of your substance use prevention education program to receive an invitation.

LOCAL GRANTS

1) **Title:** Youth Opioid Prevention Grant
   Source: Attorney General Maura Healey
   Award: $5,000
   Summary: The YOP grant is designed to support school-based prevention education initiatives to address opioid dependence and addiction in Massachusetts. The AGO is accepting grant applications from entities that will implement either a sustainable prevention curriculum or prevention programming within a public school or public school district in Massachusetts.

2) **Title:** Whole Foods Community Giving Days
   Source: Whole Foods Grocery Store
   Award: 5% of net sales from a day of sales at your local Whole Foods Market
   Summary: During Community Giving Days, individual Whole Foods stores donate 5% of that day's net sales to local nonprofits and educational organizations. Interested organizations should consult the Whole Foods website to see if their local store offers an online request form, or reach out to that store's Marketing Director.

3) **Title:** The Brown Rudnick Charitable Foundation Corp. Community Grant
   Source: The Brown Rudnick Center for the Public Interest
   Award: $2,000
   Summary: The purposes of the Community Grant Program are to simultaneously (1) encourage those involved broadly with the Brown Rudnick Center for the Public Interest to actively think about the educational needs in the community of Boston (2) recognize, encourage and collaborate with the front-line workers within the educational system who often do not have a voice in funding decisions; and (3) provide funding to assist with small, concrete projects or needs which will make an improvement in inner city education in **Boston.**

4) **Title:** Heroin and Opioid Crime Reduction State Initiative
Source: The Massachusetts Executive Office of Public Safety and Security
Award: Counties in Massachusetts were distributed the following awards. Connect with the stated agency in your county to inquire about the funds for substance use prevention education in your school/district.

- Barnstable County Sheriff's Department-$178,841.00
- Berkshire County Sheriff's Office-$108,657.00
- Bristol County Sheriff's Office-$237,820.00
- Essex County District Attorney's Office-$145,743.00
- Essex County Sheriff's Department-$157,134.00
- Franklin County Sheriff's Department-$133,000.00
- Hampden County Sheriff's Department-$188,841.00
- Hampshire Sheriff's Department-$120,812.00
- Massachusetts Department of State Police-$46,000.00
- Middlesex County Sheriff's Office-$139,647.00
- Norfolk County District Attorney's Office-$39,310.00
- Norfolk County Sheriff's Department-$112,882.00
- Northwestern District Attorney's Office-$86,860.00
- Plymouth County District Attorney's Office-$165,904.00
- Suffolk County Sheriff's Department-$100,883.00
- Worcester County-Middle District Attorney's Office-$105,981.00
- Worcester County Sheriff's Department-$189,968.00

THE RETURN ON INVESTMENT ARGUMENT

If your district/school is unable to secure a grant the next step is to request funding for the following school year. Preventing chronic substance use in local residents increases productivity and potential taxed income. While we don't want to think of our kids as dollar signs it maybe a way to motivate decision makers to invest in early elementary school substance use prevention. If your town/city is already investing substantial funds in substance use treatment or costs associated with chronic substance use then present the idea of investing in prevention. Point out to decision makers that this small investment in early elementary school substance use prevention education could be how your town/city stops over-spending on chronic substance use.

INFORMING PARENTS

PARENT NOTIFICATION SAMPLE FORM (ENGLISH)

Cut and paste the below sample form to a Word Document. Add your schools name, emblem and print on your districts letter head.

Dear Parents and/or Guardians,

Our school district will be implementing elementary school substance use prevention education programs starting _____.

Research shows that starting preventative education in early elementary school aged children reduces chronic substance use in high school. Our hope is to support your child's healthy growth and learning throughout the course of their education.

Below is a link to U.S. Department of Justice and the U.S. Department of Education brochure, *Growing Up Drug Free - A Parent's Guide To Prevention*. This document outlines the research and importance of starting early elementary school substance use prevention education. The education program will focus on the anatomy and physiology of the brain and lungs, as well as socio-emotional health. The education will be age appropriate and will use terms/language your child is already familiar with.

https://www.dea.gov/pr/multimedia-library/publications/growing-up-drug-free.pdf

To have your child opt out of this education program return this form signed below.

☐   I do not want my child to receive the preventative education

Child's Name

_____

Parent's Signature

_____

DEALING WITH OPT-OUTS

Parents have a right to decide what their children learn. The research indicates that opt-outs should be expected, maybe even in large numbers. New concepts are hard for some people to deal with. Similar to when sexual health was introduced to schools, early elementary school substance use prevention education will most likely face adversity early on. Sexual health was under a lens until teen pregnancy rates drastically dropped which took years to come to fruition. The literature projects that early elementary school substance use prevention education will have a similar history - it will be questioned until high school drug use drastically drops.

Parents that want to air on the side of tradition, and opt-out their children should be encouraged to have discussions with their children at home. The Growing Up Drug Free Parents Guide to Prevention from the U.S. Department of Education and the U.S. Department of Justice is a great resource to provide to parents who have decided to opt-out their children. It discusses educating your children at home and is updated annually. Check the U.S. Department of Education website for future annual publications.

RESOURCES ON HOME PREVENTION EDUCATION

How Alcohol Advertising Affects our Youth - Massachusetts Department of Public Health, Bureau of Substance Abuse Services

Injury Management: A Key Component of Prescription Opioid Misuse Prevention - Massachusetts Department of Public Health, Bureau of Substance Abuse Services

A Parent's Guide: Preventing Inhalant Misuse Among Children – Massachusetts Department of Public Health, Bureau of Substance Abuse Services

Daddy Used to Be Sick, But He's Much Better Now – Greater Lawrence Family Health Center Office-based Opioid Treatment Program. Written by kids with parents in the program. This is a great resource to talk to your child about recovery.

RESOURCES FOR PARENT EDUCATION

Dangers of Vaping – Stanford University Tobacco Prevention Toolkit

Drugs of Abuse 2017 – U.S. Department of Justice, DEA Resource Guide

Family Checkup: Positive Parenting Prevents Drug Abuse – National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services

Big Tobacco Targets Kids - Massachusetts Department of Public Health

THE EDUCATOR

A lot of Massachusetts's elementary schools do not have health teachers. But some do. An individual knowledgeable about health, pharmacology, long-term effects of exposure to chemicals/toxins, and trained in health education is the best educator. A science teacher formally trained in pharmacology would be a good candidate. It may also be a health teacher, but at the elementary school level it will most likely be the school nurse.

Traditional drug education is not appropriate for this age, so in depth education on anatomy and pharmacology is used instead. It's imperative that the educator be able to answer questions about the human body and the physiological effects of smoking, chemical ingestion/absorption/metabolism and drinking. This role requires a lot of preparation with the curricula. Which is why funding is explored in this toolkit. The educator will require days, if not weeks, of preparation and reading time. A substitute school nurse can be paid through grants/funding.

RESOURSES

Free Wallet Card

Drugs & The Brain — National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services

Free Books

Daddy Used to Be Sick, But He's Much Better Now — Greater Lawrence Family Health Center Office-based Opioid Treatment Program. Written by kids with parents in the program. This is a great resource to talk to your child about recovery.

Principles of Substance Abuse Prevention for Early Childhood: A Research-Based Guide — National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services

Free Posters

Big Tobacco Targets Kids - Massachusetts Department of Public Health

Second Hand Smoke: It's Bad for Everybody! - Massachusetts Department of Public Health

Drugs & Your Body: It Isn't Pretty — National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services

Prescription Drugs — National Institute on Drug Abuse, National Institutes of Health, U.S. Department of Health and Human Services

Alcohol & The Brain — Ask, Listen, Learn, Foundation for Advancing Alcohol Responsibility

Dangers of Vaping — Stanford University Tobacco Prevention Toolkit

SELECTING A CURRICULUM

There are currently only three evidence-based curricula offered for early elementary school substance use prevention (K-2nd grade). *Brain Power!* and *Generation Rx* are offered free of charge and provide ample resources for implementation. Both curriculums offer the academic standards codes each lesson meets. Both curriculums offer full versions in Spanish.

The PAX Good Behavior Game does have a cost to implement. And requires more extensive training for the educators. The PAX Good Behavior Game is designed to be taught by a classroom teacher. After they have received training from the vendor. This may work out well for districts that just can't find substitute school nurses.

"In a study of 1,563 schools 72% were offering substance use prevention education, but only 14% were using an evidence-based curriculum." –Hanley (see references for article)

BRAIN POWER!

The National Institute of Health (NIH) *Brain Power!* curriculum is the gold standard of early elementary school substance use prevention education. *Brain Power!* was researched by the NIH in multi-state randomized controlled longitudinal studies with excellent outcomes.

Brain Power! is multiple science lessons that are designed to be taught as part of science curriculum by a science teacher. The curriculum has five to six modules for each age group (grade): K-1, 2-3, 4-5, 6-9.

The modules can be completed over a two-year span or over a couple of weeks. Whatever timetable works for your district. Each module includes a lesson plan featuring resources, introduction to the module, list of learning objectives, materials list, any preparation that the teacher must do before teaching the module, step-by-step procedures on how to complete the investigation, and discussion questions. As well as a letter to send home to parents outlining exactly what was taught in the module. These letters to parents are meant to continue the conversation at home.

Brain Power! Website • Curriculum Guide K-1 • Curriculum Guide 2-3 • Curriculum Guide 4-5

Below is an outline of the module titles. As you can see evidence-based early elementary school substance use prevention education focuses is on the human body. There is no mention of criminal consequences or end-all ultimatums ("if you do drugs you'll ruin your future"). This type of threat education doesn't work, and can actually have a boomerang affect. Evidence-based practice emphasizes educating children on their bodies and explaining the effects of chemicals/toxins on their body. Once they know the information making a healthy decision will be easy.

Grades K-1

Module 1: You Could Be A Scientist

Module 2: Meet the Scientists

Module 3: Your Amazing Brain

Module 4: Keeping Your Brain Healthy

Module 5: Protecting Your Brain

Grades 2-3

Module 1: Ooey Gooey! Making Sense of Scientific Inquiry

Module 2: Brains in a Box — What Your Brain Can Do

Module 3: Sending and Receiving Messages

Module 4: Medicines and Drugs — What's Helpful, What's Harmful

Module 5: The Science Behind Smoking

Module 6: How Drugs Affect the Brain

Grades 4-5

Module 1: Drugs in Society

Module 2: Your Amazing Brain

Module 3: Neurotransmission

Module 4: Stimulants

Module 5: Alcohol, Marijuana and Inhalants

Module 6: What is Addiction?

GENERATION RX

The Generation Rx curriculum is part of an educational program series designed for different groups within the community (elementary school, teen, college, adult, senior, patient, workplace). Generation Rx was developed by Pharmacists to combat the issue of prescription drug misuse and abuse. Some of the activities are geared toward K-2nd grade, and others for 3rd-5th grade.

Medication Safety Principles Taught:

1. Only take medicine from individuals that a parent (or guardian) gives permission.

2. Do not share medication or take someone else's medication.

3. Keep medications in their original containers to avoid confusion with candy or other medicines.

4. Always store medicine in a safe place, such as a locked cabinet or a high shelf that children can't reach.

Teaching Modules/Activities

Active Stations

1) **Q&A Safety Rounds:** Define common medication terms and safe medication taking practices.
2) **Prescription Label Lookouts:** Identify the different parts of the prescription medication label.
3) **Medicine Hideouts - Safe or Unsafe?:** Determine safe places to store medications.
4) **Medication Safety Skits:** Analyze scenarios to determine if children followed safe mediation-taking practices.

Games

1) **Good Choice or Bad Choice?:** Participants work as individuals to decide if the individual in the presented scenario makes a good or poor decision. Participants will raise their "green smiley face" to indicate good decisions or "red sad face" for poor decisions.
2) **Trivia:** Participants work in teams to solve a variety of trivia questions related to pharmacy and safe medication-taking practices.
3) **Is it Candy or Medicine?:** Participants will match and classify photos as medicine or candy. Following the game, participants answer and discuss questions about the importance of keeping medicines in their original containers.

Supplemental Worksheets

Pharmacy Crossword Puzzle • Prescription Puzzlers • Patrol Drawings • Safe Sharing Worksheet

THE PAX GOOD BEHAVIOR GAME

The PAX Good Behavior Game is an evidence-based social-emotional health program that teaches self-regulation, self-control and self-management in context of collaborating with others for peace, productivity, health and happiness. A study from John Hopkins University states that PAX Good Behavior Game can reduce future substance use by 25-50%.

Implementing PAX Good Behavior Game

PAX can be launched in a single classroom, in a few grades, in a whole school, in several schools, in a district, across a county or region or even in a whole state.

PAX is only available from the PAXIS Institute. PAXIS (877) 467-2947 or email gbgorders@paxis.org.

In order to teach the PAX Good Behavior Game educators will be required to attend an 8-hour on-site training. The cost is $2,900 for up to 40 educators. The 8-hours can be done in one day or broken up into two-three days by request. Once an educator is trained the PAX Good Behavior Game kit costs $300 per educator. While the cost is high, it is the proven to show instant results in children's behavior.

The Massachusetts Department of Public Health will pay for this program. Contact the Division of School Health for more information on funding.

MEASURING OUTCOMES

Once your school starts an early elementary school substance use prevention education program *it is essential to collect data on your programs outcomes.* This can be accomplished with longitudinal data collection that starts in elementary school and is concluded when the child is in high school.

The creator of this toolkit will be conducting a statewide longitudinal study on the effects of high school students drug use when substance use prevention education is started in Kindergarten or first grade. If your school or district decides to start an elementary school substance use prevention education program in the 2019-2021 school years, please email cmcavanaugh@umass.edu to get involved in the study

Always remember to follow the Massachusetts Department of Education and Secondary Education guidelines for research in schools. And get your research approved by an Institutional Review Board.

> **"Every moment we spend educating children about their bodies is time invested in preventing future drug use. Give children the information, not the answers"**

THE RESEARCH

This section summarizes scholarly literature on substance use prevention education for early elementary school students. The titles of the articles are provided. See the reference section for additional information on the article.

A Preliminary Evaluation of The Effects Of A Science Education Curriculum on Changes in Knowledge of Drugs in Youth

Quasi-experimental controlled study on two Washington D.C. elementary schools. The intervention group had 112 students. These students went through the *Brain Power!* curriculum from the NIH and demonstrated significantly less intention to use drugs in the future. And had increased levels of knowledge about science/anatomy. Overall demonstrating that the *Brain Power!* curriculum had effective substance use deterrence effects.

A Short-term Quasi-Experimental Evaluation of D.A.R.E's Revised Elementary School Curriculum

A quasi-experimental controlled study of 1,980 elementary school students from 17 different schools, with 1,490 students receiving the intervention, and 1,450 serving as controls. The revised D.A.R.E. curriculum shows no evidence of deterrence of substance use. And actually demonstrates a boomerang affect that encourages students to act out, as evidence by a significant increase in suspension in the intervention schools. This is thought to be caused by the association of the criminal justice system and the lack of health education in D.A.R.E.

Immediate and short-term effects of the 5th grade version of the Keepin' It REAL substance use prevention intervention

A randomized controlled study examines the D.A.R.E. Keepin' it Real curriculum in 23 different schools. The 1,566 students from the 13 intervention schools compared to the 10 control schools showed no differences in substance use intentions, normative beliefs, or students' resiliency/decision-making skills. The D.A.R.E. program continues to show no evidence of success.

Media Literacy Education for Elementary School Substance Use Prevention: Study of Media Detective

Randomized controlled study of 679 elementary schools participated in study. The 344 intervention schools used the Media Detective curriculum. While 335 control schools were kept on a 'wait list' and had no intervention during the time of the study. The Media Detective curriculum was found to significantly reduce the interest in alcohol-branded merchandise. And significantly reduced the intention to use alcohol and substances in the future and increased the self-efficacy to refuse substances. Media Detective is an online homework assignment that can be completed with parents.

Use of a Social and Character Development Program to Prevent Substance Use, Violent Behaviors, and Sexual Activity Among Elementary-School Students in Hawaii

Randomized controlled study using matched pairs and randomized-clusters in 10 intervention schools and 10 control schools. The prevention education intervention started in first and second grade and continued till fifth grade. In fifth grade, three-four years after the initial intervention, 1,714 fifth graders self-reported survey results, and 1,225 teachers of participant students reported on students' risk of substance use and violence. The three-four year intervention significantly reduced negative behaviors, substance use risk and violence.

A Review of Elementary School-Based Substance Use Prevention Programs: Identifying Program Attributes

Systematic review of elementary school substance use prevention programs (K–6th grade). Thirty published evaluation studies of 24 elementary school-based substance use prevention programs were reviewed. Among 27 evaluation studies that examined program effects on substance use, 56% ($n = 15$) found significant decreases. In addition, programs most often demonstrated effects on increasing negative substance use attitudes, increasing knowledge, decreasing perceptions of prevalence rates, and improving resistance skills.

Promoting Mental Health and Preventing Substance Abuse and Violence in Elementary Students: A Randomized Control Study of the Michigan Model of Health

Randomized controlled study of 52 randomly assigned schools. The 2,512 students in the intervention group were self-reporting significantly less intention to use drugs in the future. This was a state-wide initiative in Michigan. Longitudinal studies are to follow in coming years.

Life Skills Interventions to Improve Social Confidence, Self-Management, and Protection against Drug Use in Rural Elementary School Aged Children

Quasi-experimental study used a one-group pretest and posttest design of eight to ten year olds at an after-school Boys and Girls club. Evaluation of pretest and posttest results showed increases in the knowledge, attitudes, and behavior skills of children related to self-confidence, self-management, and general social and drug resistance skills.

Effectiveness of a universal classroom-based preventive intervention (PAX GBG): a research protocol for a matched-pair cluster-randomized controlled trial

An on-going, two-year, matched-pair clustered randomized controlled trial. 42 schools were matched into pairs based on their geographical location and number of students per classroom. One school in each pair was randomly selected to receive the PAX Good Behavior Game intervention.   The results showed significant increases in students' mental health and prosocial skills, teacher's sense of efficacy, classroom behavior, and response inhibition.

Promoting Afterschool Quality and Positive Youth Development: Cluster Randomized Trial of the PAX Good Behavior Game

Matched pair, controlled randomized trial of 76 after-school programs serving 811 five-twelve year olds. Results demonstrated that the best practices fostered by PAX GBG results in higher quality afterschool programs due to more positive youth development. This was thought to be partly due to the PAX GBG training the afterschool staff participated in and because of the impact on students.

APPENDIX A

OHIO JOINT STUDY COMMITTEE ON DRUG USE PREVENTION EDUCATION
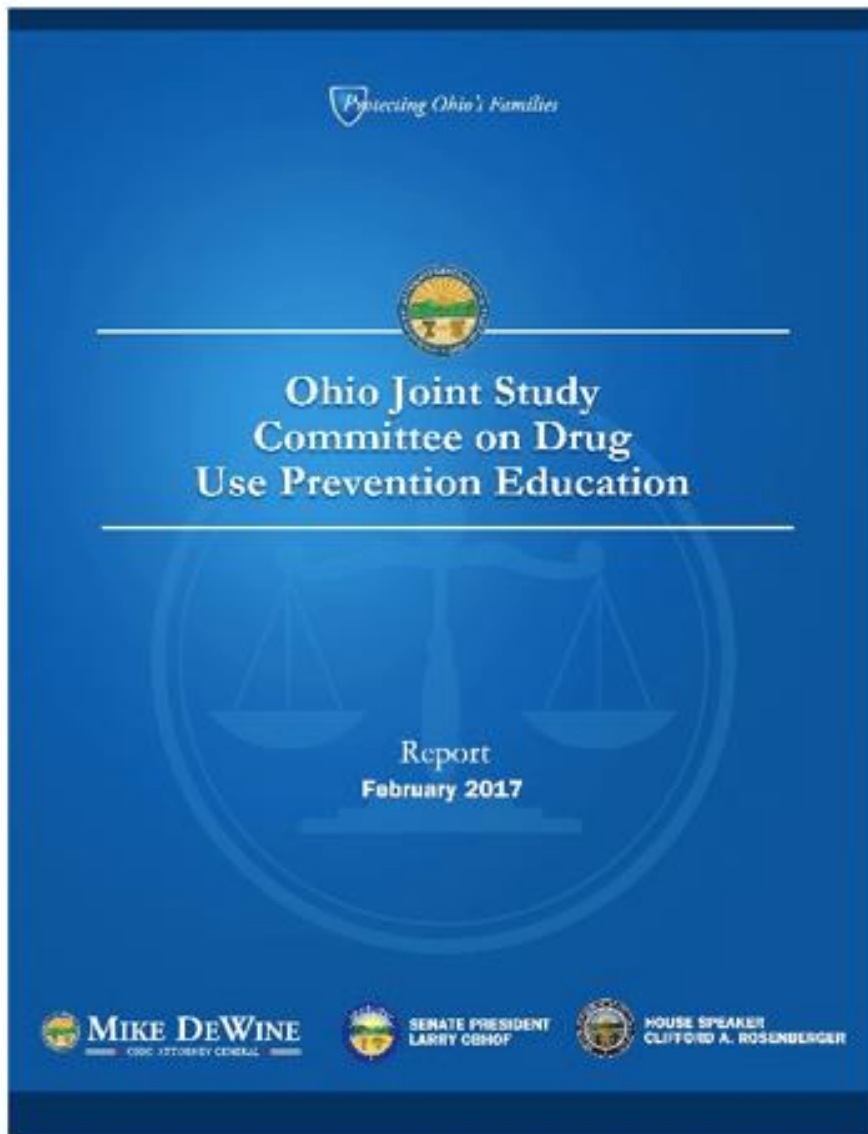
Remember to check out this document from the state of Ohio. It outlines the new mandate that all Kindergarten students receive substance use prevention education. Document Link.

APPENDIX B

STANFORD UNIVERSITY VAPING GUIDE

Feedback from School Nurse Leaders revealed that more information on vaping was needed. This Stanford University Tobacco Prevention Toolkit is an outstanding resource for nurses, educators, parents and students. The toolkit is full of information about e-cigarettes and vape pens. Make sure to check it out! Website link.

E-Cigarettes & "Vape" Pens Generations

Cig-a-Like	Variations	"Vape" Pens	"Mods"
E-cigarettes came onto the market around 2007. Most delivered nicotine and were disposable.	Variations on the first e-cigarettes included products like e-hookah and rechargeable versions	These have higher capacity batteries that can reach higher temperatures, have refillable e-liquid cartridges, and allows users to regulate the frequency of inhalations.	Large size, modifiable e-cigarettes allow for more aerosol, nicotine, and other chemicals to be breathed into the lungs, at a faster rate.

Tobacco Prevention Toolkit
Division of Adolescent Medicine, Stanford University
www.tobaccopreventiontoolkit.stanford.edu

APPENDIX C

MORE VAPING INFORMATION

Feedback from School Nurse Leaders revealed a need to inform educators, school nurses and parents about the JUUL vaporizer. This vaporizer is troubling because of its small packaging, and its ability to be disguised as a USB port. School Nurse Leaders also discussed how vaporizers could be disguised as a marker or lipstick/lip gloss container.

Check out this NPR article. And this warning for the CDC. This is a fact sheet and parent's guide from the U.S. Surgeon General. And information on the health/brain risks associated with vaping.

Until about age 25, the brain is still growing.