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A focus on youth cancer prevention education

Decreasing the impact of cancer is vital. Cancer education interventions can help ease the impact of cancer in a variety of ways. They can increase general knowledge about cancer, including modifiable and non-modifiable risk factors. These include early warning signs, screening and diagnostic options, prevention strategies, treatment options, and clinical trials. Cancer education interventions have the potential to benefit the public by increasing the frequency of constructive health behaviors being practiced (e.g., using sunscreen, not smoking, and obtaining cancer screening). The overall desired outcome of education interventions is that cancer morbidity and mortality rates will decrease, because individuals are taking measures that have been associated with reducing cancer risks.

BOOKER A, ET AL. EVALUATING OUTCOMES OF COMMUNITY-BASED CANCER EDUCATION INTERVENTIONS: A 10-YEAR REVIEW OF STUDIES. *J CANCER EDUCATION*. 2014;29:233-240.

While young people across the U.S. are able to access more information through technology with greater speed, they may be misinformed or lack understanding of how unhealthy behaviors can put their health at risk. Data underscores this concern. In Idaho, over 33 percent of high school students surveyed have tried cigarette smoking[1]; melanoma is the second most common form of cancer for adolescents and young adults 15 to 29 years old[2]; and 1 in 3 kids in Idaho is overweight or obese.[3] St. Luke's Mountain States Tumor Institute (MSTI)—a multi-site cancer program serving southern Idaho, eastern Oregon, and northern Nevada—used a community-based approach to develop cancer prevention education programs to help address these concerns.

Developing a Youth-Based Prevention Education Program

In 2006 St. Luke's MSTI identified a need for cancer prevention services in its community. This type of cancer education not only supported the mission of St. Luke's MSTI "to improve the health of the people in our region," but also made good economic sense. For example, one report cited that an investment of $10 per person per year in proven community-based programs to increase physical

Volunteer presenter provides classroom-based cancer prevention education at a local school.

activity, improve nutrition, and prevent smoking and other tobacco use could save the country more than $16 billion annually within five years. The result: a return of $5.60 for every $1 invested.[4]

Accordingly, the leadership team at St. Luke's MSTI added cancer prevention as part of the cancer program's scope of community services. After discussions with staff, the leadership team decided that these efforts should focus on prevention messages that would most benefit children and teens, primarily targeting school-aged youth. Little did the St. Luke's MSTI leadership team know how much that 2006 decision would still resonate with today's current healthcare paradigm. In "Cancer Prevention and Control: Where are the Kids?" author E.R. Burns states: "…this is the age group that begins to make lifestyle choices such as tobacco and/or tanning booth use. Without proper health science information regarding these practices, youngsters are at risk of making uninformed, and therefore poor, lifestyle decisions. School-aged children should be a major target for cancer prevention education."[5]

The St. Luke's MSTI leadership team decided that its youth-based prevention education program would focus primarily on tobacco, sun-safety education, and nutrition and physical activity. These topics have direct association with cancer, as well as prevention messages that are geared to youth audiences. The goal: to provide students with quality, evidence-based content that would hopefully translate to lower cancer rates in the future.

St. Luke's MSTI began implementation of its youth-based risk reduction program, starting with a focus on nutrition and physical activity. Efforts included educating children about healthy food choices through educational games shared at health fairs and schools, and bringing the message to cancer awareness community events, such as the American Cancer Society's Relay for Life. The program continued to evolve based on the results of these initial programs and the recognized need to expand beyond nutrition and physical activity.

Addressing Youth-Based Health Risks

In 2007 St. Luke's MSTI added tobacco prevention and education as part of the message to this targeted group with the adoption of the American Academy of Family Physicians nationally-recognized Tar Wars educational program curriculum. The customizable and easy-to-follow format provided an ideal tool for presenting tobacco prevention education for 5th grade students in Idaho. A one-hour classroom presentation emphasizes the message "don't ever start," while educating students on the marketing tactics tobacco companies use to get kids to start using their products. This program continues to be popular among teachers and students alike, as it provides needed information at a critical time in students' growth and development. (Learn more at: www.aafp.org/patient-care/public-health/tobacco-nicotine/tar-wars.html.)

> Education is the most powerful weapon you can use to change the world.
>
> NELSON MANDELA (1918-2013)

The following year, St. Luke's MSTI added sun-safety to its youth-based prevention education program, implementing an evidence-informed, classroom presentation targeted for middle school, junior high, and high school students. St. Luke's MSTI leadership team determined that sun-safety for teen-aged students was an important area of focus as this age group is more independent than their elementary school counterparts; teenagers are beginning to make their own purchases, and they are making personal decisions about sunscreen, protective clothing, and tanning bed usage. Educating students at this age helps them discover how the choices they make now may impact their health and lifestyle in the future. To keep the one-hour classroom presentation engaging and to reinforce the lessons learned, the program features a brief video about sun-safety in which a teenage girl learns about melanoma as she is producing a web-based video. The content and setting are very relatable to the teen audience. At the conclusion of the program, students are offered an opportunity to see areas of their face that may have sun damage using a tabletop skin analyzer provided by St. Luke's MSTI (see photo on page 53).

In 2012 St. Luke's MSTI adopted the evidence-based POOL COOL program to extend sun-safety education beyond the classroom. This program uses a train-the-trainer format, where pool swim staff are taught key sun-safety concepts and activities. Pool staff, in-turn, teach children about the risks of overexposure to the sun and encourage them to develop healthy habits for a lifetime. The sun-safety messages are seamlessly integrated into the swimming lessons, with the curriculum combining education, interactive activities at the pool, and pool-wide environmental changes, such as signage and sunscreen dispensers.

The latest addition to MSTI's youth-based prevention education program was introduced in 2013 and uses community partnerships and an interactive approach to the traditional classroom presentation. Developed in conjunction with Boise State University, St. Luke MSTI's Healthy Habits, Healthy U (HHHU) program targets 4th and 8th grade students and aims to increase awareness of the link between obesity and cancer. Students learn how healthy eating and physical activity can reduce their risks of developing cancer. HHHU's two-day lesson plan includes a cancer prevention overview provided by the classroom teacher and includes hands-on activities. Students have the opportunity to see and safely handle preserved organ specimens, allowing them to compare and contrast organs with and without cancer.

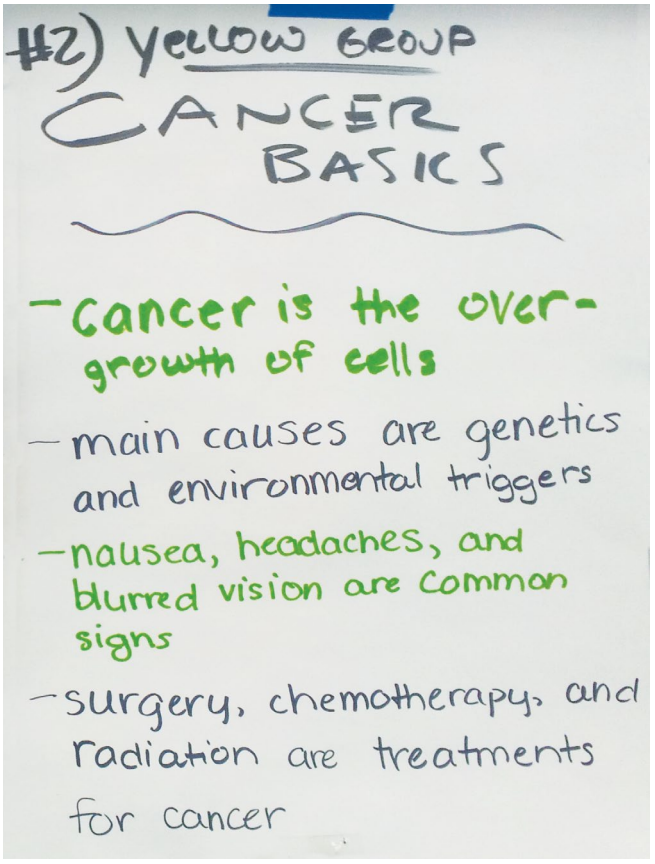
Identifying Evidence-Based Resources

Providing students with quality, evidence-based content has been a challenging aspect of program development. While many options are available, it is not always easy to quantify the effectiveness of these resources. The need to use resources wisely to achieve the best outcome is a top priority for St. Luke's MSTI; fortunately, research around these issues has been standardized and evidence-based resources are becoming more readily available.

One available tool is a website that houses the official collection of all Community Preventive Services Task Force findings and the systematic reviews on which these tools are based. The Community Guide is a credible resource with many uses because it is based on a scientific, systematic review process and answers critical questions such as:[6]

- What interventions have and have not worked?
- In which populations and settings has the intervention worked or not worked?
- What might the intervention cost? What should I expect for my investment?
- Does the intervention lead to any other benefits or harms?
- What interventions need more research before we know if they work or not?

This website provides the evidence basis for choosing interventions that work within specific populations and environments. For organizations that serve diverse communities, such as St. Luke's MSTI, the Community Guide can be very useful in providing direction, justification, and the evidence needed to support local prevention interventions.



8th grade student poster summarizing HHHU cancer education.

Another helpful resource is the National Cancer Institute (NCI) Research-tested Intervention Programs (RTIPs) website: http://rtips.cancer.gov/rtips/index.do. One of the evidence-based online resource tools on the Cancer Control P.L.A.N.E.T. portal (http://cancercontrolplanet.cancer.gov/), RTIPs is a searchable database of cancer control interventions and related program materials. The website is designed to provide program planners and public health practitioners with easy and immediate access to research-tested materials available for use in a community or clinical setting.[7] The POOL COOL program discussed earlier is an RTIPs program that St. Luke's MSTI adapted for use in communities across southern Idaho. These websites also provide useful information for ideas and planning for many other cancer prevention interventions.

Table 1. Community-Clinical Linkages for St. Luke's MSTI Youth Cancer Prevention Education Programs

ST. LUKE'S MSTI CANCER PREVENTION INTERVENTION	COMMUNITY LINKAGE	CANCER PREVENTION PROGRAM
Tobacco-use prevention education	Idaho Chapter of the American Academy of Family Physicians (AAFP), local schools and school districts	Idaho Chapter of the American Academy of Family Physicians (AAFP), local schools and school districts
Sun-safety education	Local schools and school districts	Skin Cancer Prevention (Source: St. Luke's MSTI)
	Local outdoor swimming pools and Parks and Recreation Departments	POOL COOL (Source: RTIPs website)
Obesity and cancer risk education	Boise State University and Boise School District	Healthy Habits, Healthy U (Source: Partnership between St. Luke's MSTI and Boise State University)

Community-Clinical Linkages

St. Luke's MSTI identified the collaboration or partnership with community resources—often referred to as a community-clinical linkage—as an important factor to the success of its youth-based prevention education program. These relationships provide critical resources to aid in the continuation of the program for subsequent years. In developing its youth-based prevention education program, St. Luke's MSTI acknowledged that children and adolescents are establishing patterns of behavior and making lifestyle choices that affect their current and future health. Program success depends on families, schools, and communities working together to create an environment that facilitates the health development of these children and adolescents.[7] Partnering with other community organizations and entities allows community-based prevention education programs to thrive and undergo modification as the environment changes. Table 1, above, identifies the community-clinical linkages involved in St. Luke's MSTI youth-based prevention education programs.

Below we take a deeper dive into each component of St. Luke's MSTI Youth Cancer Prevention Education Program, including program goals and outcomes.

Tar Wars

In its guide, Best Practices for Comprehensive Tobacco Control Programs, the Centers for Disease Control and Prevention (CDC) recommends statewide programs that combine and coordinate community-based interventions that focus on preventing initiation of tobacco use among youth and young adults.[8] One such program (as mentioned earlier) is the AAFP's Tar Wars, a tobacco-free education program for 4th and 5th grade students. The evidence-based program is designed to teach children about the short-term health effects and image-based consequences of tobacco use and about being tobacco-free. It provides tools for children to make positive decisions regarding their health and promotes personal responsibility for their well-being.

St. Luke's MSTI staff works with volunteers to bring Tar Wars to Idaho classrooms. Tar Wars uses a community-based approach to mobilize family physicians, educators, and other healthcare professionals (like St. Luke's MSTI), to accomplish its program goals of:[9]

- Increasing knowledge of short-term health effects and image-based consequences of tobacco use
- Illustrating the cost and financial impact of using tobacco and ways that money could be better spent
- Identifying reasons why people use tobacco
- Explaining how tobacco advertising, tobacco use in movies, and the tobacco industry market their products to children.

A number of studies have evaluated the Tar Wars program and found that it does, in fact, achieve these goals.[10-13] For example, one quantitative evaluation of the longitudinal impact of Tar Wars showed sustained improvements in students' knowledge and attitudes related to tobacco use. Students exhibited greater recognition of the health effects, cost, and image distortion

associated with tobacco use compared to their peer control group. Based on student, teacher, and presenter perspectives, this qualitative evaluation of Tar Wars found a high level of satisfaction with the program and positive, short-term changes in knowledge of tobacco use. Students indicated an understanding of key program elements, and classroom teachers believed the program was worthwhile and presented unique information.[14]

Research from St. Luke's MSTI backs up the positive, short-term changes in knowledge of tobacco use in our local communities. A Tar Wars post-presentation questionnaire of school year 2012-2013 participants (n= 1,121) found that:

- 98.6 percent agreed that smoking causes bad breath.
- 92.1 percent stated that "Smoking a pack of cigarettes daily would cost hundreds of dollars yearly."
- 86.7 percent acknowledged that "Smokeless tobacco products are harmful to the body."
- 81.2 percent agreed that "Advertisers did not tell the truth about tobacco products."

Sun-Safety Education

Skin cancer is the most common form of cancer in the U.S. and, unlike most other cancers, skin cancer rates are climbing. Idaho consistently ranks among the highest states for melanoma incidence and death rates. The call to action from the Comprehensive Cancer Alliance of Idaho is to educate patients of all races and ethnicities on sun-safety and skin cancer prevention.[2] To address this issue, St. Luke's MSTI developed a presentation intended to meet the needs of the school curriculum and area schools. The presentation includes recommendations for primary and middle school interventions to reduce risk of skin cancer based on strong evidence of their effectiveness in increasing sun-protective behaviors and decreasing ultraviolet exposure related to sunburn incidence and formation of new moles.[15]

The goal of St. Luke's MSTI's sun-safety classroom presentation is to:

- Increase knowledge among middle and high school students of the health effects of ultraviolet exposure, including an increased risk of skin cancers

Lifeguards lead a skin cancer prevention learning activity—the Sunscreen Stretch—during a POOL COOL lesson.

In Their Own Words

Yesterday, several weeks after your visit, I had a mother come into my classroom after school to say thanks for teaching her daughter the importance of sunscreen. They had been skiing and her daughter, who had fought wearing it [sunscreen] for years, asked if her mom had remembered to pack it. Authentic learning at its best!

Boise School District
Middle School Health Educator

I do think that it [POOL COOL] has and will make a difference if we all continue making our community aware of small steps to lower their chances [of skin cancer]. We see such a difference in the awareness of children and their parents. Programs such as these are worthwhile and important to continue. Thank you for your support.

Manager, Filer City Pool
Filer, Idaho

Thank you again for a wonderful, well-designed lesson presentation. Your time and commitment to changing how today's kids look at nutrition and physical activities are appreciated and essential. Hopefully your proactive approach is the beginning of an enduring method that assists in changing the tide of society's current attitudes toward fitness, proper eating habits, and the eventual ramifications they have on their personal health and the healthcare system.

4th Grade Teacher
Garfield Elementary
Boise, Idaho

- Provide an engaging and interactive presentation to help students learn and relate to the sun-safety messages.

After completion of the sun-safety presentation, participants will:
- List at least two ways they can reduce their risk for skin cancer
- Understand that ultraviolet exposure occurs year round and that it's important to protect exposed skin all year
- Know that tanning and tanning bed use can lead to higher risk of skin cancer.

A short post-presentation assessment given to a sample of participants after presentations in school years 2012-13 and 2013-14 (n=581) demonstrated we are reaching our educational objectives.
- 92 percent of participants correctly identified at least two ways they can reduce their risk for skin cancer.
- 89 percent answered in the affirmative when asked if "Sun screen should be worn every day, including during the winter and on cloudy days."
- 97 percent correctly indicated that "Indoor tanning or tanning beds are not a safe way to get a tan."

POOL COOL

Skin cancer prevention is both an Idaho state priority and a local priority of St. Luke's MSTI. In keeping with the need for expanding skin protection practices, St. Luke's MSTI wanted to expand the reach of its efforts and impact the youngest children at risk of exposure to harmful rays of the sun.

The Community Guide recommends interventions in outdoor recreational and tourism settings that include skin cancer prevention messages or educational activities for visitors, and may also provide free sunscreen of SPF 15 or greater. This recommendation is based on strong evidence of effectiveness for increasing sunscreen use, avoidance of sun exposure, and decreasing incidence of sunburns.[16]

The POOL COOL program is a multi-component sun-safety education program designed for use at swimming pools. The program goal: to increase awareness, motivation, and sun protection practices among children ages 5-10 who take swimming lessons, parents of the children, pool staff, and other pool users.[17]

After completion of the POOL COOL education presentation, lifeguards and swim instructors will:
- Describe how to reduce risk of skin cancer
- Define positive and negative aspects of the UV rays from the sun
- List causes of skin cancer
- Demonstrate at least one POOL COOL activity or lesson.

The POOL COOL program teaches children about the dangers of overexposure to the sun and encourages them to develop healthy habits for a lifetime. Lessons are taught in conjunction with regular swimming lessons, with the curriculum combining

education, interactive activities at the pool, and pool-wide environmental changes.

St. Luke's MSTI adapted POOL COOL based on the following factors: 1) the program is evidence-based; 2) St. Luke's MSTI and local outdoor pools had the resources and time commitment required to implement the program; and 3) cancer program leadership found the program to be feasible, sustainable, and potentially expandable.[18]

Another advantage of the POOL COOL program was that it allowed St. Luke's MSTI to establish clinical-community linkages with state Parks and Recreation Departments. Specifically, St. Luke's MSTI educated Parks and Recreation employees about the importance of skin cancer prevention measures and helped them to establish policies that will help ensure that shade is part of the planning for future parks, playgrounds, and ball fields.

POOL COOL has proven to be an efficient program to provide skin cancer prevention education to children, teens, and parents. It uses a train-the-trainer format, which allows St. Luke's MSTI to educate a large number of pool staff, usually teens and young adults, about the importance of practicing sun-safety behaviors. Staff is also taught the daily curriculum they will provide to children in their classes. St. Luke's MSTI has found that for each staff member trained, the sun-safety education is passed on to an average of 26 children (range 17 to 41 children) over the summer. An added benefit is that parents also hear the important prevention messages provided by the pool staff. Although the impact on parents has not been measured, many pool staff report positive parental sun-safety changes as a result of the messages.

An important consideration for program development is expense. For POOL COOL, St. Luke's MSTI found the cost to start and maintain the program minimal. In 2013 the cost to establish POOL COOL at a new outdoor facility averaged $280 (with most of the money spent on sunscreen and dispensers, pool signage, etc.). While this amount can vary based on the needs and the size of the specific location, it averages about $1.70 per person (pool staff and swim students). The cost for an established POOL COOL site is even lower, with a yearly total cost of about $106 per pool, or about $0.26 per person.

A volunteer uses the skin analyzer device, which reveals underlying and unseen damage to the skin caused by UV exposure.

> In the long history of humankind (and animal kind, too) those who learned to collaborate and improvise most effectively have prevailed.
>
> CHARLES DARWIN

Healthy Habits, Healthy U

Global research from the World Cancer Research Fund shows that about one third of the most common cancers can be prevented through diet, maintaining a healthy weight, and engaging in regular physical activity.[19] Since 2008 cancer has been the leading cause of death in Idaho.[20] With these alarming statistics in mind, St. Luke's MSTI is working to educate students on the benefits of a healthy lifestyle. As mentioned previously, Healthy Habits, Healthy U (HHHU) is an interactive classroom presentation designed to educate children in 4th and 8th grades on the importance of lifestyle choices now and the impact these choices could have on their future health.

According to research published by The Cochrane Library, "becoming obese is strongly linked to inappropriate nutrition and low levels of physical activity, so unsurprisingly [many intervention programs] aim to improve either or both of these behaviours."[21] The Community Guide finds insufficient evidence to determine the effectiveness of school-based programs to prevent or reduce overweight and obesity among children and adolescents, because of the limited number of qualifying studies reporting non-comparable outcomes.[22-23] With this in mind and recognizing the critical need to take action for the health of the children in its community, St. Luke's MSTI co-developed (with Boise State University) HHHU. The program brings the Boise School District, Boise State University, and St. Luke's MSTI together to help reduce obesity and cancer risk, while supporting parents, teachers, and other staff as they implement health promotion strategies and activities. The goal of the HHHU program: to educate students about the relationship between healthy habits, nutrition, physical activity, and cancer risk reduction.

POOL COOL deck signage at local pool reminds patrons to use sunscreen.

After completion of the HHHU program:

- All participants will be able to differentiate between healthy and cancerous organs
- 4th grade participants will state multiple healthy eating tactics they will complete over a five-day period
- 4th grade participants will state a variety of physical activities they plan to complete over a five-day period
- 8th grade participants will list key health practices that can reduce cancer risk.

HHHU program implementation began with a pilot phase that was completed during the 2013-2014 school year. The program served 180 4th graders and 225 8th graders in their 2014 spring semester. Program evaluation found:

- Students successfully differentiated between the healthy and cancerous organs.
- 4th graders identified healthy eating and physical activity behaviors they planned to complete over a five-day period.
- 8th graders summarized key facts from the presentation, connected concepts to health practices that can reduce cancer, and brainstormed health behavior changes they could make to increase their overall health.
- Teachers reported HHHU lessons integrated well with their current health curriculum, they would partner with HHHU again, and they would recommend the program to other teachers.

While HHHU is still in its formative stages, the program has helped establish a new, creative approach to address critical health needs, and provides critical community linkages. Without the collaboration between St. Luke's MSTI, Boise State University, and the Boise School District, HHHU may not have been developed. These relationships make HHHU a stronger and more effective program.

The Role of Cancer Programs in Youth-Based Prevention Education

As the successes of St. Luke's MSTI illustrate, cancer programs are ideal organizations to support or lead cancer prevention efforts in their communities. Further, cancer programs accredited by the American College of Surgeons Commission on Cancer (CoC) are required to provide at least one cancer prevention program annually. Specifically, CoC 2012 Standards requirements include this provision: "At least one cancer prevention program that is targeted to meet the needs of the community and should be designed to reduce the incidence of a specific cancer type. The prevention program is consistent with evidence-based national guidelines for cancer prevention."[24]

NCI estimates that only about 15 percent of U.S. cancer patients are diagnosed and treated at the nation's major academic-based cancer centers; the vast majority of cancer patients (about 85 percent) are treated at community hospitals in or near the communities in which they live.[25] Many patients choose community hospitals because they are close to family, friends, and jobs, whereas treatment at academic or tertiary cancer programs may require long commutes or extended stays away from home.[25] Youth cancer prevention education provides a way for a cancer program to engage its community in a positive and beneficial environment. The community-clinical linkages provide opportunities for collaboration that will support the next generation to be healthier and better educated about cancer prevention and the role their choices play in the future. St. Luke's MSTI will continue its decades-long commitment to educational programs to the communities we serve, especially the youth population. OI

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