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Sun-Safety: Assessing Barriers and Promoting Sun-Safe Practices for Vermonters.

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An illustration of a group of people sitting around a large, dark blue table in a meeting. The people are shown from a top-down perspective, with their heads and arms visible. They are engaged in various activities: some are looking at laptops, some are looking at documents, and one person is holding a tablet. The table is cluttered with papers, a coffee cup, and other office supplies. The background is a light blue color with several white hexagonal shapes of varying sizes scattered across it. The overall style is flat and modern.

Sun-Safety: Assessing Barriers and Promoting Sun-Safe Practices for Vermonters.

Joy Benner


Family Medicine Clerkship, January 2019

Colchester Family Medicine

Mentor: Benjamin Clements, MD

Problem Identification and Need

- Skin cancer is the most common cancer in the U.S. and in Vermont[1][2].
 - Although non-melanoma skin cancer rates are much more common, melanoma rates in Vermont, including Chittenden county, are some of the highest in the U.S. [2].
- Estimates show that 1 in 5 Americans will develop some form of skin cancer in their lifetime [1].
 - Rates of skin cancer continue to climb.
 - The average annual number of adults with skin cancer in 2007-2011 was 4.9 million, which increased from 3.4 million in 2002-2006[6].
- It is estimated that UV radiation causes about 90% of skin cancer [3].
- Having one blistering sunburn or more than five lifetime sunburns doubles the risk for melanoma [3].
 - 37.1% of U.S. adults and 55.8% of U.S. youth report 1 sunburn in the past year [6].
- About 80% of sun damage occurs before the age of 21.
- Using broad spectrum sunscreen with at least SPF 15 (although AAD recommends use of SPF 30) and above can reduce non-melanoma skin cancer rates by 40% and melanoma skin cancer rates by about 50% [3].
- Sunscreen is mentioned at 0.9% of visits.
- Currently, it is estimated that only about 15% of men and 30% of women in the U.S. use sunscreen for every hour of UV exposure [1].
 - Use was lowest among men, people with skin of color, adolescents, less physically active, and people with lower socioeconomic status [1].



Cancer Site	Male and Female			VT Cases (per year)
	U.S. Rate (All Races)	N.E. Rate (All Races)	VT Rate (All Races)	
All Sites	431.6	462.3	452.6 ▲ ▼	3,692
Lung and Bronchus	57.3	59.1	62.3 ▲ ▲	527
Melanoma of the Skin	21.7	21.4	35.8 ▲ ▲	285
Colon and Rectum	38.1	38.7	35.1 ▼ ▼	285
Urinary Bladder	19.9	23.5	22.9 ▲	190
Non-Hodgkin Lymphoma	19.0	20.9	21.0 ▲	168
Thyroid	14.5	19.5	14.4 ▼	97
Kidney	16.4	16.3	14.3 ▼ ▼	114
Leukemia	13.6	14.5	12.4 ▼	97
Pancreas	12.2	13.1	12.3	103
Oral Cavity/Throat	11.6	11.3	11.7	99
Brain/Nervous System	6.3	6.6	6.5	47
Esophagus	4.4	4.8	6.2 ▲ ▲	54
Myeloma	6.6	7.0	5.7 ▼ ▼	48
Liver	7.8	7.8	5.5 ▼ ▼	47
Stomach	6.4	7.4	4.8 ▼ ▼	39
Larynx	3.2	3.3	3.4	28
Hodgkin Lymphoma	2.6	3.2	2.9	19

▲ Statistically higher than the U.S. rate. ▲ Statistically higher than the N.E. rate.
▼ Statistically lower than the U.S. rate. ▼ Statistically lower than the N.E. rate.

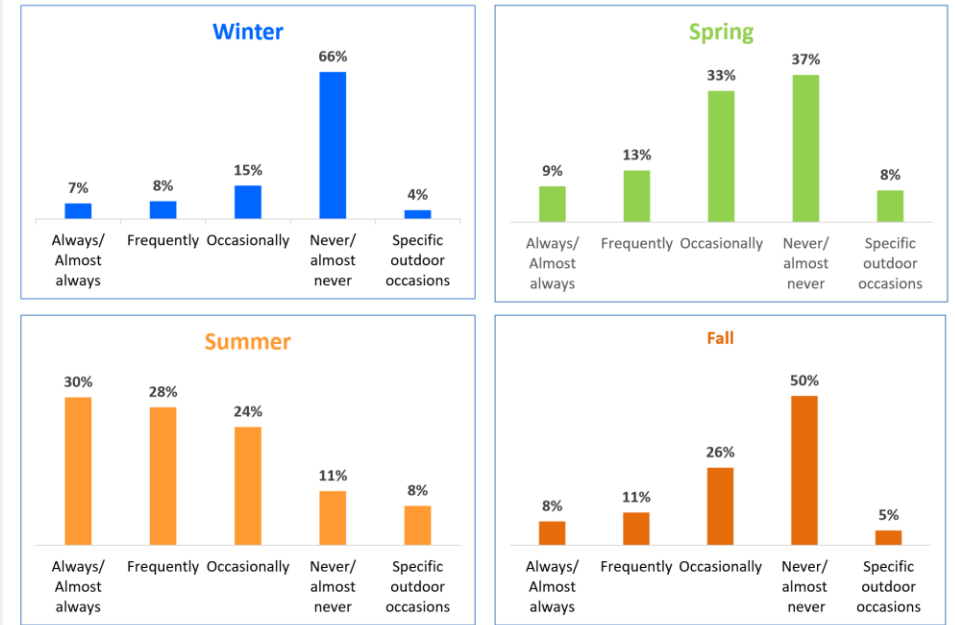
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https://www.healthvermont.gov/sites/default/files/documents/pdf/stat_cancer_in_cidence_mortality_tables-2012-2016.pdf

Problem Identification and Need

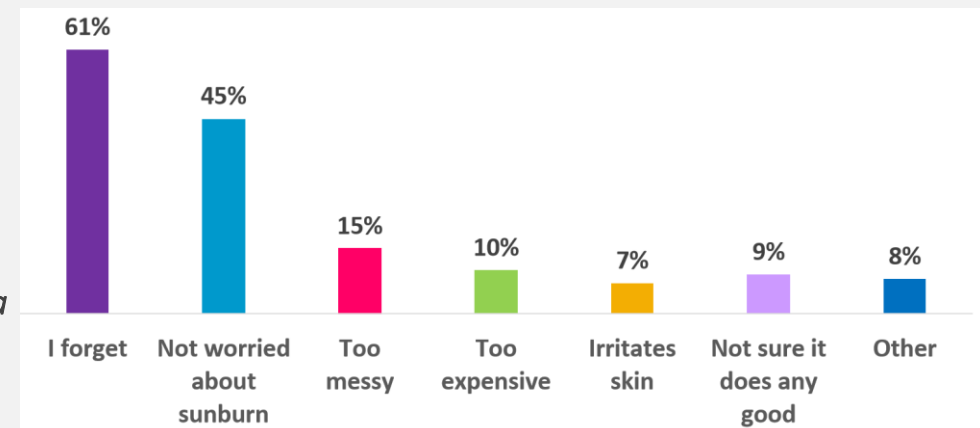
- 35% of Vermonters and 63% of Vermont adolescents, including within Chittenden county, experience at least one painful sunburn yearly [4].
- Only 16% of Vermont high schoolers, and 27% of Vermont middle school students use sunscreen regularly [2].
- A 2018 study done by impactmelanoma.org in conjunction with the Vermont Department of Health, showed that while Vermonters have good sunscreen practices in the Summer, they do not regularly use sunscreen in the Winter, Fall, or Spring [4].
- This study demonstrated these main barriers to sunscreen use in Vermonters[4]:
 1. Forgetting to use sunscreen (61%)
 2. Not worried about getting sunburn (45%)
 3. Too messy (15%)
 4. Too expensive (10%)
 5. Not sure if it does any good (9%)
 6. Irritates skin (7%)
 7. Other (8%)
 - Values add up to more than 100% due to more than response option

Study done in Canada (Boggild & From, 2003): frequently cited barriers to sun safety include inconvenience (34% of respondents), forgetting to use sun safety measures (49%), a desire to be tanned (33%), and protective clothing being too hot to wear (56%). High compliers were notable for their great likelihood of being counseled by a physician about sun safety (P < 0.025) and their slightly higher mean knowledge scores

Seasonal Sunscreen Use



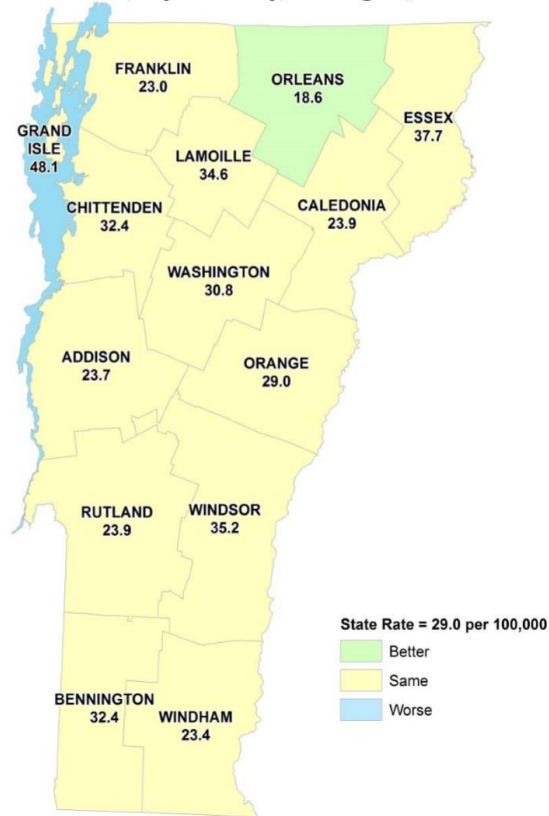
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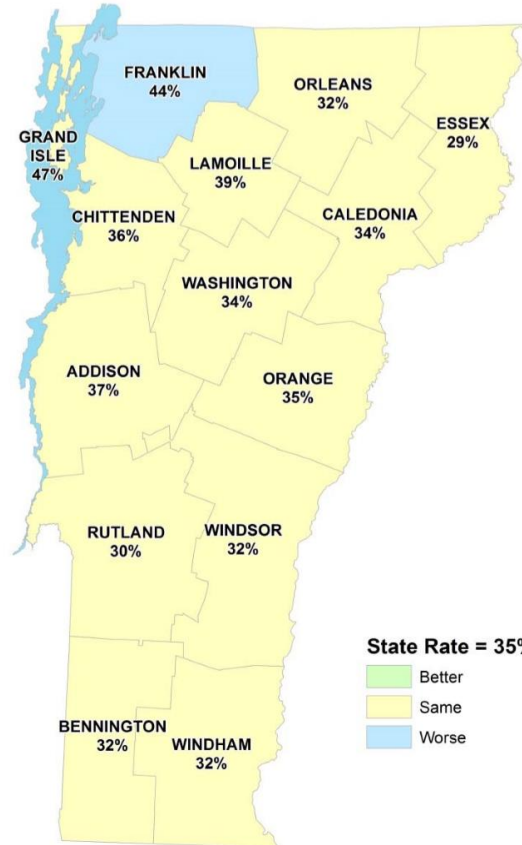
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These graphics depict melanoma rates, adult sunburn rates, and adolescent sunburn rates in various counties in Vermont.

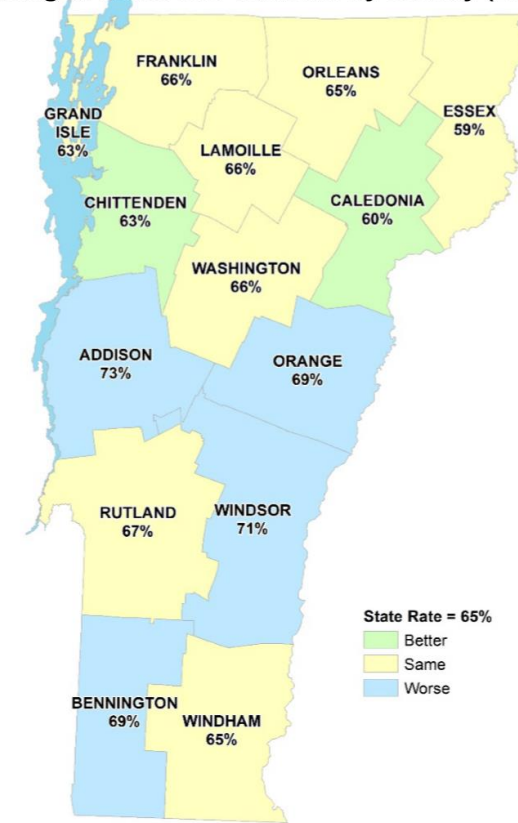
Melanoma, UV Exposure Associated Cancer, Incidence Rate, by County, All Ages, 2008-2012



Sunburn Rate by County, Age 18+, 2013

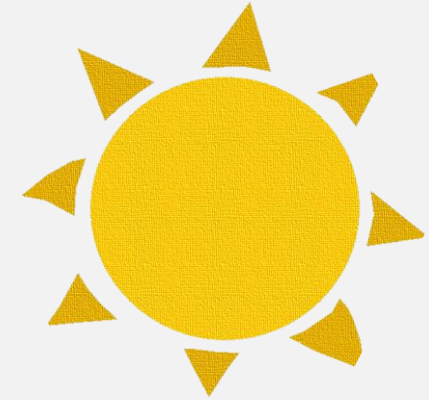


Percent of Adolescents (Grades 9-12) Reporting Having at Least One Sunburn by County (2015)



Public Health Cost

- Given that skin cancer is one of the most commonly diagnosed cancers annually, it has huge implications as a public health concern.
- The average annual number of adults with skin cancer in 2007-2011 was 4.9 million, which increased from 3.4 million in 2002-2006 (up 136%).
- The average cost of skin cancer treatment was \$8.1 billion in 2007-2011 up from \$3.6 billion in 2002-2006 (a total increase of 126%) [4].
- In 2007-2011, the average cost for non-melanoma skin cancers was \$4.8 billion and was \$3.3 billion for melanoma skin cancers [4]
- Actinic Keratosis account for 5 million dermatology visits each year totaling a cost of \$920 million annually [5].
- Estimates show that emergency room visits regarding sunburns accounted for \$11.2 million in 2013 [6].



Community Perspectives

Had the pleasure of engaging in interviews with multiple individuals from different disciplines to better understand Vermonters access to sunscreen, barriers to use, and how to better promote sun-avoidance and better sun-safety practices!

Benjamin Clements, MD Colchester Family Medicine

- Melanoma rates in Vermont are higher than we as providers would like, and it seems that Vermonters are not using sunscreen and sun-safe practices as much as we would hope. In busy clinic days, talking about sunscreen and sun-safe practices can fall to the wayside especially when you have to prioritize. It is likely not being discussed in wellness visits as often as it should. This is definitely an area of improvement, and we should try to bring up sun-safe practices more often. We can encourage providers to have this conversation in more wellness visits. The SmartPhrase is a great way to help providers do this in a time efficient way.

Audrey Monroe, LICSW Colchester Family Medicine

- I think the biggest barrier is finances for those in the lower socioeconomic range. If they see dermatology at UVMHC they could apply for the Patient Financial Assistance Program which helps income eligible patients with copays/deductibles – especially for screenings. One way to improve sunscreen access is maybe having dermatology or primary care work with the Vermont Department of Health to provide free sunscreen to those from lower socioeconomic backgrounds.



Community Perspective

Sharon Mallory, MPH
Coordinator – Comprehensive Cancer Control Program
Vermont Department of Health

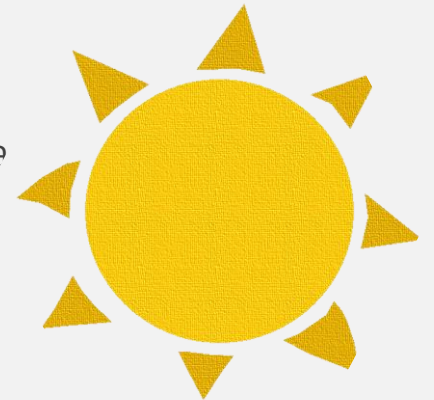
- Vermont has the second highest melanoma rate in the US, behind only Utah. There are several hypothesis behind why: Vermont has a rapidly aging population, and a population that is largely made up of fair-skinned individuals. Although, interestingly enough, we have found that even after adjusting for these factors, we still have one of the highest rates of skin cancer. It is also thought that Vermonters often get “short bursts” of sun because of our short summer seasons. It is thought in cancer research that short bursts may actually be more harmful than long-term exposure because you don’t build up that melanin reserve. We are also not as good at wearing sunscreen all year round because we have long winters and cloudy days, so people may not be wearing enough sunscreen during these times.
- We at the Vermont Department of Health are trying to increase awareness and use of sunscreen by placing dispensers in state parks around the state. This work is done with with impact melanoma. We also worked with impact melanoma to research why Vermonters aren’t using sunscreen. We also work with rec departments and summer camps to promote sunscreen use in adolescents.
- To help reduce UV damage in adolescents, Vermont and several other states passed legislation to ban tanning bed use in anyone under 18. While it is hard to know exactly the impact this has had, using the Youth Behavior Risk Survey (YRBS), we did notice a dramatic reported decrease from use the year before the legislation to the year after. We are having difficulties because you don’t have to have a license to operate a tanning bed, so it’s hard to keep track of where adolescents might have access to tanning beds. We also think we might be missing high school seniors that turn 18, who might use tanning beds for say an event like prom, because the YRBS only surveys teens until age 17.
- Because skin cancer develops years down the line and has a relatively low mortality, it can be harder to promote awareness in younger populations. We now know that people are getting a significant amount of their lifetime skin damage before the age of 21, so it is important to address this. Research has shown that providing education about this in elementary school has more impact than providing education about this later on, such as in middle or high school.



Intervention & Methodology - Promoting Sun-Safety

Provided educational presentation to providers about skin cancer statistics and sun-safe practices.

- Encourage use of SPF 30 or greater with broad spectrum coverage (covers both UVA and UVB).
 - UVA thought to lead to more photodamage – such as wrinkling. Can penetrate glass.
 - UVB thought to lead to more sunburn and skin cancers.
- Promote everyday use of sunscreen on exposed skin, even in winter time.
 - Snow and ice can reflect more damaging rays of sun
 - 80% of UV rays penetrate on cloudy days
 - Don't forget the lips.
- Encourage use as young as possible – 80% of sun damage occurs by age 21!
- Avoid tanning beds – exposure to indoor UV with tanning beds before age of 45 has 75% increase risk of early melanoma [1].
 - VT and a few other states have created a law that restricts tanning bed use to ages 18+.
- Minimize sun exposure from 10 AM to 2 PM.
- Seek shade.
- Wear long sleeve shirts, pants, sunglasses, and wide brimmed hats when possible.
- Bring up sunscreen regularly: barriers that Vermonters report to sunscreen use include forgetting to use it and not being concerned about sunburns.



Intervention & Methodology - SmartPhrase

Created a SmartPhrase to help providers more efficiently and easily address sun-safety.
Accessible by typing .SUNSCREENFAQSJB

What is skin cancer?

There are three common skin cancers:

- (1) [Basal Cell Carcinoma](#)
- (2) [Squamous Cell Carcinoma](#)

These are the most common skin cancers. These cancers rarely spread elsewhere in the body but can cause a lot of damage to the area near the cancer.

- (3) [Melanoma](#)

Melanoma skin cancers tend to be less common but are more serious because they can spread to other organs in the body (metastasize).

Actinic Keratosis – these are considered “pre-cancer” spots. Although actinic keratosis is not cancer, they do mean that your skin has significant sun damage and some of these spots can turn into cancer.

Who gets skin cancer?

Anyone can get skin cancer, even those who do not sunburn easily. Any amount of skin damage from the sun or artificial UV (such as tanning beds) can lead to skin cancer down the line.

However, some people do have more risk factors and should be extra cautious:

- Those with light skin color.
- Skin that burns, freckles, reddens, or becomes painful in the sun.
- Blue or green eyes.
- Blond or red hair.
- Certain types and large number of moles.
- Having a family history of skin cancer.
- Having had skin cancer before.
- Those on immunosuppression.
- UV exposure from the sun or from tanning beds: one blistering sunburn or five lifetime sunburns double the risk of melanoma.

Where does skin cancer occur?

Skin cancer can happen anywhere that there is skin! The most commonly affected areas are sun-exposed areas like the head, face, ears, neck, hands, and forearms.

However, skin cancer can happen on places like the bottom of feet, fingernails, and toenails.

It is important to check your skin regularly. Keep an eye out for any spots that stand out like an “ugly duckling” or spots that bleed, itch, scab, are painful or change rapidly. Have someone check areas that may be hard for you to see, like your back, bottom of your feet, and in-between your toes! Talk to your doctor about any spots that are concerning to you.

How can I reduce my risk of getting skin cancer?

Skin cancer is quite common. About 1 in 5 Americans will have skin cancer in their lifetime. However, skin cancer is one of the few cancers that you can take steps to prevent! You can reduce your chances of

getting skin cancer by cutting back on the amount of UV exposure you get from the sun or indoor tanning beds.

Below are some important steps you can take to reduce your risks:

1. Reduce the amount of time you spend in the sun, especially from the hours of 10 AM to 2 PM
2. Seek shade!
3. Wear sun protecting clothing, like long sleeves, pants, sunglasses and wide-brimmed hats if possible.
4. Wear **30 SPF, broad spectrum, water resistant sunscreen all year round!**
 - Wear sunscreen in the winter. You will likely need less sunscreen than during the summer but apply sunscreen to areas that are not covered by clothing. These areas include: the head, ears, neck, hands, and lips!
 - Wear sunscreen on cloudy days! About 80% of the suns rays go through clouds.
 - Wear sunscreen in your car or when sitting in front of glass windows! The type of rays that causes wrinkles and thin skin can go through glass.

What type of sunscreen should I use?

The type that you will use over and over!

Using sunscreen will not only reduce sun burns and risks of skin cancer, it also prevents wrinkles and photoaging of your skin!

Make sure your sunscreen is SPF 30 or above, broad spectrum, and water resistant. The higher SPF is better to block more UV rays, but no SPF will block 100% of the sun’s rays.

- UV rays are from the sun and damage our skin, these include UVA and UVB.
- UVB rays cause sun burn and skin cancers. UVA rays can go through glass and cause skin to wrinkle and age earlier than we want.
- Broad spectrum sunscreen blocks both types of UV rays.

There are many types of sunscreen, and many you can buy cheaply at the drug store:

- **Creams** are thicker and tend to be better for dry skin and the face.
- **Makeup products (brush on SPF or foundations)** are good for the face but only if you use them on your entire face and don’t forget to apply sunscreen to other parts of your body like your ears and neck! These need frequent reapplications throughout the day!
- **Gels** tend to be easier to apply to areas with a lot of hair.
- **Spray on sunscreens** are easy to apply over the body and easier to apply on children.
- **Sticks** are helpful to apply on the eyes and lips (or you can get lip balm with SPF).
- **Avoid sunscreen and insect repellent combinations**, you have to apply sunscreen more often than you should apply insect repellent!

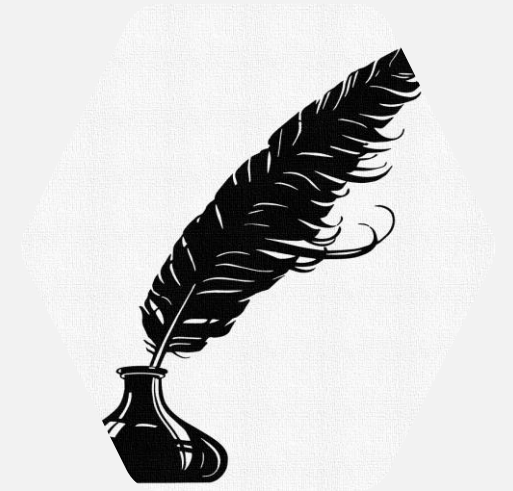
Whatever you choose: **apply generously and re-apply every 2 hours and after each time you get your skin wet!**

adapted from: <https://www.aad.org/sun-protection/sunscreen-faqs>



Response

- Gave a brief presentation on current skin cancer data and trends. Also provided information on current research around Vermonters sunscreen barriers and utilization to providers at Colchester Family Medicine. Discussed sun-safe practices.
 - Overall, feedback was positive and providers felt this was education and that they learned something new about skin cancer and sunscreen use.
- Administered brief 5-point Likert Scale Survey to assess reaction to SmartPhrase after providers reviewed the SmartPhrase.
 - Only 5 providers were present at the presentation, and all responded to the survey.
 - All providers agreed or strongly agreed to use this SmartPhrase in their practice.
 - All providers agreed or strongly agreed that this SmartPhrase easy to use.
 - All providers either strongly agreed or agreed that this will be useful in their practice.
 - All providers either strongly agreed or agreed that this will be beneficial to their patients.
- Overall very positive response toward the SmartPhrase and providers plan to use it in their everyday practice and feel that it will help their patients and promote better sun-safe practices.



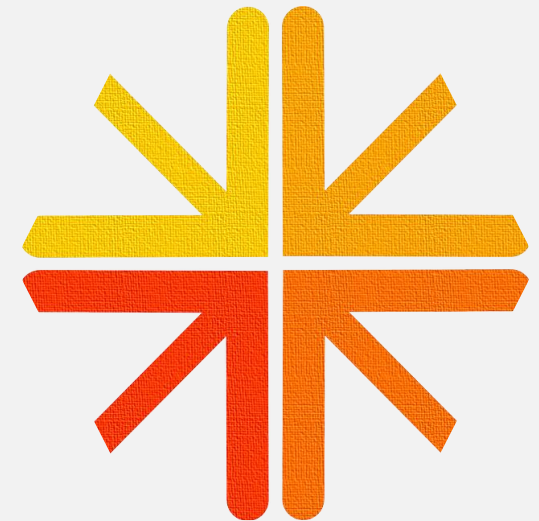
Effectiveness and Limitations

- **Effectiveness:**

- Provided a brief survey for staff to complete regarding presentation and SmartPhrase use, which indicated that the presentation was educational and that the SmartPhrase will be useful in their practice.
- A useful future evaluation would be to assess how often providers use this SmartPhrase in after visit communications.
- Another useful evaluation would be to assess whether patients found the information in this SmartPhrase helpful and whether it impacted behaviors.
- An interesting future project would be to do larger study to assess barriers to sunscreen use, as current research is limited.

- **Limitations:**

- Very limited research exists on barriers to sunscreen use, the one research study I could find had limited data information or study information.
- Challenging to provide information on which particular patients would benefit from these materials.
- Did not have time to evaluate whether patients find the materials helpful.
- Limited information regarding sunscreen use and patterns specific to Chittenden county.



Future Indications

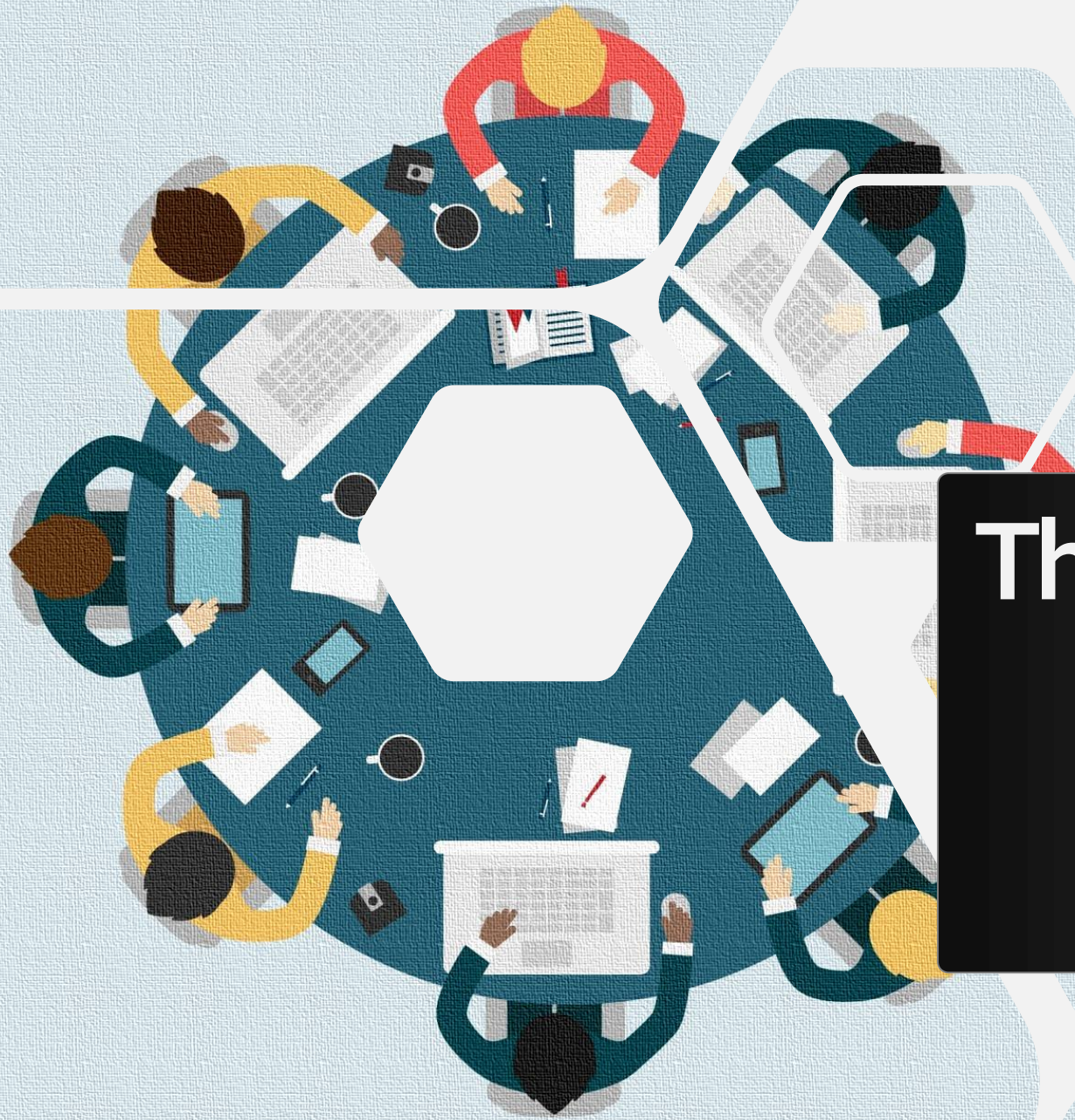
- Benefit would be gained from more studies assessing Vermont patterns of sunscreen use and limitations. Only one study could be found, which contained limited information. Very few studies exist that look at sunscreen barriers in the United States.
- Future studies could also assess whether the SmartPhrase had an impact on patients sunscreen use and knowledge about skin cancer.
- It would also be beneficial to use this information to provide educational materials to schools in Vermont. Research indicated that many adolescents experience sunburns annually, and a large risk of later skin cancer comes from early life sunburns. School-aged population would greatly benefit from encouraged sunscreen use. After speaking with VT Department of Health this should be mostly focused in elementary schools.



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Thank you!