Instructor's Notes

Lesson: Control Cancer Through Education and Prevention

Objectives:

- Encourage healthier lifestyles by showing how cancer awareness, early intervention, and lifestyle changes can lead to decreased incidences of cancer and prolonged life expectancy
- Increase knowledge in all of the content areas by using cancer as a focus for instruction
- Utilize various critical thinking skills related cancer
- Foster a love for learning by providing hands-on activities

Subjects: Reading, writing, science, math, social studies, health, and critical thinking

1. Cancer is one of the biggest killers in America. We have made significant progress in the fight against cancer, but more can be done through education. Knowledge is power! To introduce the concept of cancer in the class and link it to GED content areas, use the introductory pages (or make them into transparencies). This basic information and good visuals show cells, abnormal cells, different types of tumors, and cancer. The information was obtained from the X-Plain website at http://www.nlm.nih.gov/medlineplus/tutorials/howtopreventcancerearlyscreening/hp119201.html. If you have Internet access, this website also has an excellent interactive tutorial about all types of cancer.

2. When it comes to cancer prevention, there are two very clear messages: certain cancers may be avoided and health in general can be improved by adopting healthier lifestyles; and cancers may be cured, or the prospects of cure greatly increased, if they are detected early. Read the *"7 Ways to Prevent Cancer"* handout, post it in your classroom, and discuss what we all can do to live longer and better. (To print out a color version go to the Harvard website http://www.hsph.harvard.edu/cancer/materials/pdfs/7ways.pdf)

3. Lung cancer is one of the most preventable cancers. The activities will help students understand some of the physical dangers of smoking. Read the handout *"Nicotine"* and then complete some of the hands-on activities on the "Smoking Awareness Activities" handout. The activities will employ critical thinking skills and spark discussion about healthy lifestyle choices.

4. Kick Butts Day is the Campaign for Tobacco Free Kids' annual celebration of youth leadership and activism. March 31, 2004, will be the ninth annual KBD. Celebrate the day by holding a Mock Trial for “Mr. Butts”. For more information or to see when a future Kick Butts Day is scheduled, check http://kickbuttsday.org *Please note that the mock trial information was in a PDF file and has a misspelled word. Be sure to give your students a reward if they find it! Call us at the SIPDC when you find it and let us know.

5. In some parts of the world, melanoma (the deadliest form of skin cancer) is increasing at rates faster than any other cancer. It kills one person every hour! Find out the facts about skin cancer and review sun safety tips for your students and their children. Check the cancer statistics on melanoma and complete the questions about the graphs. An activity on the effects of sunlight is also included. Further extensions are:
    - What is the changing ozone layer?
    - What is the greenhouse effect?
    - Where in the world is the sun most intense and why?
    - When is the sun most intense in your part of the world and why does the sun intensity change?
    - Do other mammals get skin cancer and what about their environment and adapted body coverings make them less vulnerable than humans?

6. Everyone needs to be aware of the risks of breast cancer. A handout about this cancer is included as well as screening guidelines. Also encourage students to do a breast self-exam monthly. Directions are included. Create a buddy system to remind each other. Even men in class can get involved by making them aware of the risks for the women in their lives. Although not as common, men can get breast cancer as well. A chart for breast cancer incidences worldwide is included with discussion questions. Encourage students to create a poster for breast cancer awareness.

7. Early detection is key when working towards fighting cancer. A short reading on this subject is included for use in class. Also included as a follow-up to the reading is a series of charts and graphs on different types of cancer. Some of the charts and graphs have questions for discussion included. These charts and graphs and a wide variety of others can be found at the following website and also can be run as a power point presentation: http://www.cancer.org/downloads/PRO/Cancer%20Statistics%202004.ppt. Use the data to allow students to prepare graphs that represent the information. Discuss the different types of graphs and have the students present their information to others in class. For math extensions, ask students to figure percentages or fractions from raw data (lifetime probability of developing cancer) or ask them to find the differences in trends from year to year. For social studies, refer to the trends in overweight prevalence, adults, chart that includes maps of the United States.

8. Colorectal cancer is the fourth most common cancer. Use the reading and glossary sheets to not only discuss this cancer, but also share a little human anatomy. Screening guidelines from the American Cancer Society are also included for you to share with your students.

9. Screening for cervical cancer especially having a pap smear is very important for our female students, as this is a cancer that can usually be treated very successfully with early intervention. A reading about pap smears is included along with very important information about genital herpes, HIV, etc., and how high risk behaviors can contribute to the cause of this type of cancer. This would be an excellent time to bring in a health care professional as a guest speaker.

10. Students also should be aware of prostrate cancer, one of the major killers of men. Whether you have male students or not, knowledge of this deadly killer is important. Share the reading and the risk factors sheet included in this packet.

11. Several valuable Internet websites are listed for you as resources:

    - www.cancer.org
    - www.cdc.gov/health/cancer.htm
    - www.hsph.harvard.edu/cancer
    - www.komen.org
    - www.thebreastcancersite.com

Nicotine

If you don't smoke, you probably wonder why anyone would bother with such a filthy, expensive habit! On the other hand, there must be a reason why millions of people smoke cigarettes.

That reason is nicotine. It is a mood-altering drug found in tobacco. Most people take nicotine by smoking cigarettes. Pipe tobacco, cigars, chewing tobacco, and snuff all have nicotine in them, too.

One cigarette contains about 10 milligrams of nicotine. For every cigarette smoked, about one or two milligrams of nicotine end up in the lungs. From there, the nicotine gets right into the bloodstream.

Nicotine collects in the body and stays there even after the last cigarette of the day. This means that if you smoke, you are exposed to nicotine round the clock, even when you are sleeping. This is just one of the reasons why nicotine is so addictive and why quitting smoking is so hard. Your body isn't used to having nicotine just when you light up. It's used to having it all the time!

Nicotine affects the body and mind in many ways. It increases your heart rate. It tightens up your blood vessels, which means there is less room for the blood to pass through. Your blood pressure increases, because of the faster heartbeat and tighter blood vessels. If you are not used to it, nicotine can also make you sick to your stomach.

How Nicotine Affects the Brain

Nicotine gets into the brain just seconds after you inhale it. This is why smokers feel better moments after they light up. Smoking cigarettes can make you feel pleasant and relaxed. It also can make you feel more focused and alert. Both kinds of feelings come from the effects of nicotine.

Nicotine affects the medulla, which is the part of the brain that controls basic body functions. Nicotine makes nerve cells in the brain fire more rapidly. This is what makes your heart rate speed up and your blood vessels tighten.

Nicotine also causes the brain to release more of two chemicals, adrenaline, and noradrenaline. Both of these chemicals are used by the nerve cells that send messages to the brain that make you feel happy, confident, and alert.

Another reason you can feel more alert after a cigarette is because nicotine makes nerve cells fire more rapidly all over. This causes more thinking to go on at once.

To make you feel relaxed, nicotine acts like a brain chemical called acetylcholine.

This brain chemical helps send signals in the brain that calm your thoughts. It reduces worry and stress. It also calms your muscles to make you less jittery. When nicotine gets into the brain, it acts a lot like acetylcholine. So, you get even more of these calming effects.

Acetylcholine also lowers your appetite. This helps explain why many people gain weight when they try to quit smoking. They are used to having the nicotine in their brain, acting like acetylcholine to make them less hungry.

Harmful Effects of Nicotine and Smoking

Nicotine is a deadly poison if you get enough of it. Therefore, it is not surprising that using small amounts for a long time can harm your body. Nicotine can cause cancer of the throat, lungs, and other areas of the body. It can cause heart disease, too.

Some 410,000 Americans die each year from smoking-related illnesses, such as emphysema. With this disease, your lungs no longer expand. This makes it very difficult to breathe in enough air to stay healthy. Smoking is the largest preventable cause of death in the nation.

Nicotine Dependence

You can see how addictive nicotine is by the number of people who smoke even though they want to quit. Many scientists believe that nicotine is even more addictive than cocaine. A lot of people continue to smoke even after it has become hard for them to breathe or they have come down with lung cancer.

Most smokers become physically dependent on nicotine. If you are a smoker and try to quit, you probably will go through withdrawal. This can make you cranky and restless. You may get headaches and be more tired than usual. You may have trouble sleeping. You may also have trouble focusing on what you are doing . This is because your brain has made itself naturally less alert to adjust to the way that nicotine excites it.

When you go through nicotine withdrawal, your heart rate may go down. Also, your appetite won't be held back. This means you might gain weight if you are not careful.

Withdrawal from nicotine is not pleasant. However, doctors don't think it can harm you. Withdrawal is certainly better for you than smoking! The physical effects of withdrawal from nicotine start to wear off after about two weeks. However, you may never stop craving a cigarette every once in awhile. This is because of the psychological dependency on nicotine. Many smokers go through counseling to help them resist the urge to smoke again.

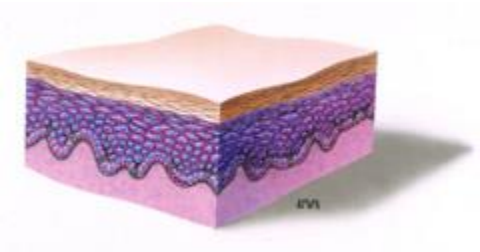
What is Skin Cancer?

Skin cancer starts in the outer layer of your skin, in one of three types of cells: basal, squamous, or melanocyte.

Basal Cell Carcinoma—The most common form of skin cancer, basal cell carcinoma usually appears as slow-growing, translucent, raised, pearly nodules which, if untreated, may crust, ulcerate, and sometimes bleed. If detected and treated early, there is a greater than 95 percent cure rate.

Squamous Cell Carcinoma—A common form of skin cancer, squamous cell carcinoma appears as nodules or red, scaly patches and can metastasize if untreated. While the cure rate is very high if treated early, squamous cell carcinoma can sometimes result in death.

Melanoma (*cutaneous melanoma*)—Melanoma is a disease of the skin in which cancer (malignant) cells are found in the cells that color the skin (melanocytes). It is the least common but fastest growing and most dangerous type of skin cancer. While it usually occurs in adults, it may also occasionally be found in children and adolescents.



Your skin is made up of two main layers: the epidermis (the top layer) and dermis (the inner layer). Melanocytes are found in the epidermis and they contain melanin, which gives skin its color.

How is Skin Cancer Detected?

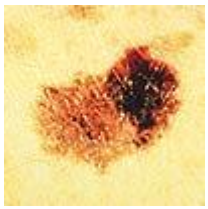
Fortunately, skin cancer is usually easy to detect since it occurs on the skin surface. In fact, you can do a simple self-exam yourself that only takes a few minutes.

- Thoroughly examine your skin every few months.
- Look for changes in the size, color, texture or shape of a mole or other dark spot.
- Are there any **new**, abnormal moles? (Or bleeding from a mole?)
- Have any unusual bumps or growths on face, ears, arms, chest, and back?

If you have any of the above physical features—or anything else out of the ordinary—show your physician or a dermatologist (a skin specialist) as soon as possible.

Visible Warning Signs

Unlike some forms of cancer, skin cancer can be easily seen. Here are some visible warning signs you should be on the lookout for:



A. Asymmetry—one half unlike the other half.

B. Border irregular—scalloped or poorly circumscribed border.

C. Color varied from one area to another; shades of tan and brown, black sometimes white, red, or blue.

D. Diameter larger than 6 mm as a rule (diameter of pencil eraser).

If you find any suspicious areas, you should show them to your doctor.

The Facts About Getting Too Much Sun!

UV, or ultraviolet, rays are the sun's "invisible" burning rays. They can cause sunburns, and in some cases skin cancer. There are three types of UV rays:

UVA: Are more constant year-round and penetrate deeper into the skin's layers; UVA rays are also harmful and contribute to burning, premature aging of the skin, and the development of certain forms of skin cancer.

UVB: Are the primary cause of sun burning, premature aging of the skin and the development of skin cancer.

UVC: Are blocked by the ozone layer and do not reach the earth's surface.

It's a fact: Overexposure to the sun can result in skin cancer later in life. What are your family's risks from exposure to powerful UV rays? Consider these facts and statistics.

The Dangers of UV Exposure

- You can sunburn even on a cloudy day!
- On average, children get 3 times more exposure than adults!
- Eighty percent of a person's lifetime sun exposure is estimated to occur by age 18!
- Concrete, sand, water, and snow reflect 85% to 90% of the sun's UV rays.
- Depletion of Earth's ozone continues to increase your exposure to UV rays!

Skin Cancer

- In some parts of the world, melanoma is increasing at rates faster than any other cancer.
- More than 1 million new cases of skin cancer are diagnosed each year in the US!
- Melanoma, the deadliest form of skin cancer, kills one person every hour!
- One blistering sunburn can double a child's lifetime risk of developing skin cancer!

Information from http://www.sunsafetyalliance.org

Sun Safety Tips

It's natural to enjoy all kinds of outdoor activities! The Sun Safety Alliance (SSA) encourages you to be safe by following these sun-safety tips year-round to help prevent serious skin damage—***and possibly skin cancer***—later!

- Keep in mind the sun is strongest between 10 am and 3 pm.
- Always wear protective clothing when outside.
- Wear clothing that's dark and tightly woven.
- Wear a wide-brimmed hat and sunglasses.
- Remember that UV rays bounce off sand, snow, concrete, and water.
- Do not use sun tanning beds.
- **Keep very young children (6 months or less) out of the sun.** The baby should have a hooded carriage or stroller and be wearing a hat and clothing.
- Sunscreens need to be applied liberally and evenly over all exposed areas.
- Apply a sunscreen with a SPF of 15 or higher whenever you're outdoors. To achieve adequate UV protection you should use products that provide broad spectrum protection, which means protection against both UVB and UVA rays. For broad spectrum protection, look for products that provide an SPF of at least 15 and contain ingredients like Avobenzone (Parsol 1789) or zinc oxide.
- For children, the SSA recommends sunscreen with an SPF 30 or higher.
- Apply sunscreen before going outdoors and reapply often.
- Reapply sunscreen after swimming, perspiring, and toweling off.
- Provide complete sunscreen coverage for your skin (including neck, ears and lips!).
- For people with thin or thinning hair, apply sunscreen to the scalp as well.
- And remember stay in the shade whenever possible!

Breast Cancer Awareness

Help your students understand the risk factors associated with breast cancer and to see which factors apply to them personally.

Risk Factor— A risk factor is anything that puts you at higher risk of developing a particular disease.

Hand out the following Matching Quiz and ask each person to fill it out, following the directions. After the quiz is completed, go over the answers, discussing what lifestyle changes minimize the modifiable risk factors.

Directions:

- Eleven risk factors associated with breast cancer are listed in the WORD BANK above the chart. Information about these risk factors is listed in **Column B**.
- Select one of the risk factors. Write it in **Column A** next to the information that best describes the risk factor.
- Decide whether or not each risk factor can be changed by one's behavior. In **Column C**, write Yes or No to indicate whether this risk factor can be changed.
- In **Column D** place a checkmark next to the risk factors that affect you.
- Summarize your personal risk factors in the space provided.

Adapted from Common Questions About Breast Cancer by Y-Me, Facts on Breast Cancer by American Cancer Society, and from Healthy Women, Healthy Lives from Harvard Medical School.

Developed by the Alice Aycock Poe Center for Health Education.

http://www.healthyteachers.org/teaching_tools_lesson7.html

Risk Factors Associated with Breast Cancer

WORD BANK

Weight	**Radiation Exposure**	**Children**
Age	**Family History**	**Height**
Prior Cancer	**Pre-malignant Condition**	**Food Choices**
Menstrual Period	**Menopause**	

A. Risk Factors	**B. Information**	**C. Can this be Changed? Yes/No**	**D. My Personal Checklist**
	The majority of all breast cancer diagnoses are in women over age 50		
	One or more first degree relatives had breast cancer (mother, sister, daughter)		
	No experience of childbirth, or having children after 30		
	Early onset, before age 12		
	Late onset after age 55		
	Obesity, overweight, not enough exercise		
	Taller than 5'8"		
	Prior history of cancer in either breast; history of cancer of uterus or ovaries		
	Significant exposure to chest (example: treatment for a prior condition)		
	Atypical hyperplasia or another pre-malignant condition		
	High-fat diet may increase risk of breast cancer		

Summary:

Risk factors associated with breast cancer that might apply to me are:

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