



Virtual Learning

Medical Interventions

Breast Cancer

April 15, 2020



Medical Interventions

Lesson: April 15, 2020

Objective/Learning Target:

Describe the potential risk factors and preventative measures for breast cancer. (3.2.3)



Let's Get Started:

Read [this article](#) and answer these questions:

1. What do the genes BRCA 1 and BRCA 2 do in human cells?
2. How might they be responsible for cancer?
3. What percentage of breast cancer is related to BRCA genes?
What is the likelihood of developing breast cancer with one of these BRCA mutations?



Let's Get Started: **Answers**

Read [this article](#) and answer these questions:

1. What do the genes BRCA 1 and BRCA 2 do in human cells?
 - a. repair cell damage and keep breast, ovarian, and other cells growing normally
2. How might they be responsible for cancer?
 - a. Tumor suppressor genes- stop functioning allowing for cell growth
3. What percentage of breast cancer is related to BRCA genes? What is the likelihood of developing breast cancer with one of these BRCA mutations?
 - a. ~10%; 72%



Background Info

We can detect these BRCA mutations using marker analysis.

- cheaper/faster than sequencing entire genome
- Use markers called Short Tandem Repeats on gene of interest
 - # of repeated letters (A,C,T,G) corresponds to specific allele
- Run gel electrophoresis and measure the distance STR travelled



Lesson Activity

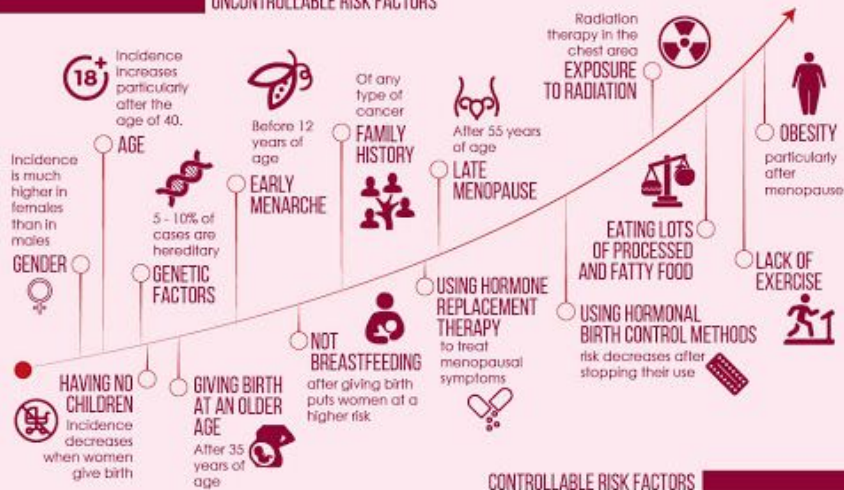
After reading the information found on [this website](#), construct a graphic organizer or brochure on a piece of paper that communicates the controllable and uncontrollable risk factors for breast cancer. Include what you learned about BRCA mutations as well as prevention strategies that people can take.

Lesson Activity - Answer

BREAST CANCER RISK FACTORS AND PREVENTION

RISK FACTORS

UNCONTROLLABLE RISK FACTORS



PREVENTION

EXERCISING



MAINTAINING A HEALTHY WEIGHT



LIMITING ALCOHOL INTAKE





Practice

For each scenario, indicate whether it increases or decreases the risk of developing breast cancer.

1. Sharon's sister had genetic testing, and was found to have a BRCA mutation.
2. Tammy completed a pedigree and determined her family has a history of ovarian cancer.
3. Janet just celebrated her 50th birthday.
4. Sammy likes to eat fresh fruits and vegetables.
5. Roberta is getting radiation treatment for her lymphoma.



Practice - **Answers**

For each scenario, indicate whether it increases or decreases the risk of developing breast cancer.

1. Increases
2. Increases
3. Increases
4. Decreases
5. Increases



Additional Practice

1. Check your understanding by taking this [online quiz](#) of breast cancer and risk factors.
2. Test your knowledge by completing this breast cancer risk [worksheet](#).



Additional Resources

1. View how [23andMe](#) can detect the gene variants for breast cancer.
2. View this [research article](#) that discusses how the microbiome can have harmful roles in the development of breast cancer.