Mastectomy vs. Preventative Screening for Woman Diagnosed With the BRCA1/2 gene:

Created by Jasmine Hardie

Based on the review question; is prophylactic mastectomy's the safest option for women at high risk of developing breast cancer?

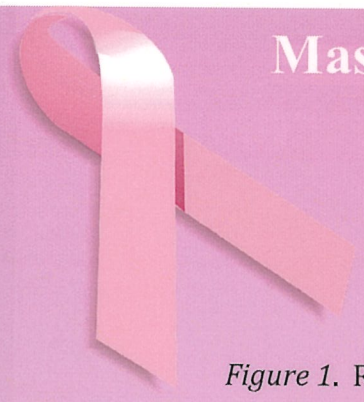

Figure 1. Ribbon (Jimenez, 2016)

The hereditary BRCA mutation

Breast cancer is New Zealand's third most diagnosed cancer responsible for approximately 600 deaths yearly (Ministry of Health, 2015), however if found early, appropriate measures can be taken to reduce the risk of death.

A high-risk woman is a woman who has inherited the BRCA1/2 mutation. The BRCA genes are more likely to be found in woman with significant family history of breast cancer, unlike the general public where it only affects approximately 0.1% (O'Neill, Valdimarsdottir, DeMarco, Peshkin,

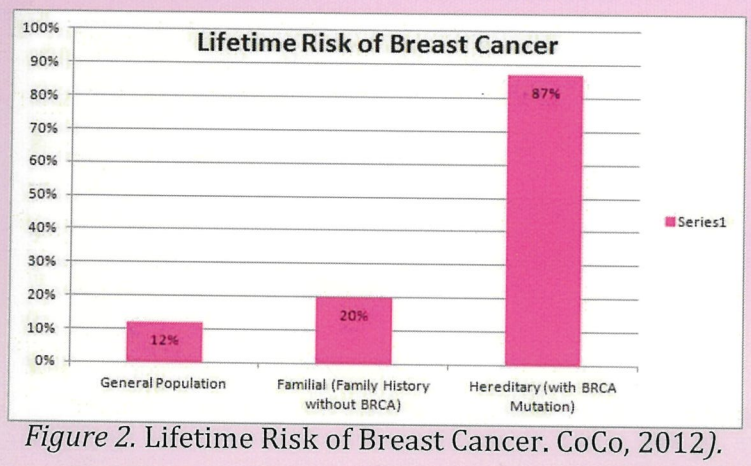

Figure 2. Lifetime Risk of Breast Cancer. CoCo, 2012*).*

Testing for the BRCA1 and BRCA 2 mutation allows individuals a chance to consider and research the advantages and disadvantages of preventative measures such as prophylactic mastectomies or regular screening along with thorough regular physical examinations (O'Neill et al, 2010)

Prophylactic mastectomies vs. screening considerations:

- Prophylactic mastectomies reduce the risk of developing breast cancer by 95% for those with the BRCA gene (Hartmann, Schaid, Woods, Crotty, Myers, Arnold, Petty, Sellers, Johnson, Mcdonnell, Frost, & Jenkins, 1999).
- Cost factor - mammograms and MRIs for ineligible individuals are expensive making it difficult to prevent the risk to the best of their ability for any with low incomes.
- Age when receiving positive BRCA results – younger participants (<40yrs) are more likely to opt for prophylactic mastectomies, as they understand the higher risk can compromise their quality of life (Schwartz, Isaacs, Graves, Poggi, Peshkin, Gell, Finch, Kelly, Taylor, & Perley, 2012).
- Potential anxieties of loss of self -identity after mastectomies. Here is where genetic counselling is important to inform of potential distress, and help with ways to cope pre and post surgery.

Recommendations:

1) The Ministry of Health should offer all with a higher risk for breast cancer due to familial history free BRCA mutation testing, significantly reducing the mortality rate for hereditary breast cancer. Depending on the type of testing needed, the cost of BRCA testing can range from several hundred to thousands of dollars, which many people can simply not afford despite believing they may be at risk (National Cancer Institute. 2015).

2) It should be compulsorily to attend genetic counselling prior AND post genetic testing. Evidence shows there may be associated psychological distress related to choosing which intervention to take. The most evidence based care is provided by a healthcare professional to ensure although anxieties cannot be fully diminished, they can be reduced meaning less distress meaning better quality of life.

Conclusion:

It can be seen that prophylactic mastectomies are the optimal option after receiving positive BRCA genetic results. Prophylactic mastectomies reduced the risk of developing breast cancer for woman who had inherited the BRCA genetic mutation by up to 90% thus making it 'safer' then regular screening where a metastasising malignancy can always be missed.

CoCo, C. (2012). Lifetime Risk of Breast Cancer. Retrieved from https://cocoandbrca.wordpress.com/tag/cancer/

Hartmann, L, Schaid, D., Woods, J., Crotty, T., Myers, J., Arnold, P., Petty, P., Sellers, T., Johnson, J., McDonnell, S., Frost, M., & Jenkins, R. (1999). Efficacy of Bilateral Prophylactic Mastectomy in Women with a Family History of Breast Cancer. *Obstetrical & Gynecological Survey, 54*(6), 381-383. Doi: 10.1097/00006254-199906000-00017

Jimenez, J. (2016). Ribbon. Retrieved from https://pixabay.com/en/ribbon-tape-rosa-cancer-png-1101997/

Ministry of Health. 2015. *Breast Cancer.* Retrieved from: http://www.health.govt.nz/your-health/conditions-and-treatments/diseases-andillnesses/breast-cancer

National Cancer Institute. (2015). *BRCA1 & BRCA2: Cancer Risk & Genetic Testing*. Retrieved from http://www.cancer.gov/about-cancer/causes-prevention/genetics/brca-fact-sheet#q1

O'Neill, S., Valdimarsdottir, H., Demarco, T., Peshkin, B., Graves, K., Brown, K., Hurley, K., Isaacs, C., Hecker, S., & Schwartz, M. (2010). BRCA1/2 test results impact risk management attitudes, intentions, and uptake. *Breast Cancer Res Treat Breast Cancer Research and Treatment, 124*(3), 755-764. Doi:10.1038/ncponc0930

Schwartz, M., Isaacs, C., Graves, K., Poggi, E., Peshkin, B., Gell, C., Finch, C., Kelly, S., Taylor, K., & Perley, L. (2011). Long-term outcomes of BRCA1/BRCA2 testing: Risk reduction and surveillance. *Cancer, 118*(2), 510-517. Doi: 10.1002/cncr.26294

PECOT model:

By using the PECOT model, the following question was structured to allow me to critically review best evidence relating to appropriate clinical practice to then present as a visual poster. "Is double mastectomy's the safest option for women at high risk of developing breast cancer?"

PECOT category	Information relating to question	Explanation
Population	Woman under the age of 40 who are deemed high-risk for developing breast cancer	Hereditary breast cancer if often diagnosed at a young age
Exposure (intervention)	Woman contemplating risk reducing interventions regarding their heightened risk of breast cancer	I will be looking at articles/journals which looks at the comparison of perceptions regarding whether prophylactic mastectomies were used as the main preventative measure for breast cancer in high risk woman, or whether a less invasive however less safe option of regular screening with MRI's and practical examinations was chosen instead.
Comparison/Control	Woman who are also deemed high risk of breast cancer however have negative or uninformative BRCA mutation results	I was interested in how the BRCA mutation results changed an individuals perceptions of what is necessary to decrease the risk of breast cancer. This included comparing positive results to negative or uninformative results
Outcome	Woman who chose to undergo prophylactic mastectomies had a significantly decreased risk of developing breast cancer in later years due to removal of harmful mutations	As it is already known that testing positive for the BRCA gene increases the chances of developing breast cancer later in life, the information instead wanted is whether undergoing a prophylactic mastectomy as a preventative measure was the safest and more reliable compared to regular screening.
Time	Post receiving positive BRCA mutation genetic results	This time period is when preventative measure is highly discussed as it is currently happening in the individual's life and as it is an emotional time, decisions are usually made.

Whitehead (2013).

Summary:

I have chosen to present my clinical issue regarding investigating whether prophylactic mastectomies or regular screening is safer, and the issues surrounding this for woman who have been diagnosed as carrying the BRCA mutation, in the form of a poster. I have chosen to present as a poster as knowing breast cancer is the third most common cancer in New Zealand (Ministry of Health, 2015), it is always practical to display a reminder for people wherever possible. This poster aims to capture any female's attention, especially those like myself who recognise as being a visual learner by using pictures as well as a bright colour scheme, which is highly known as being related to breast cancer awareness.

Many individuals although may have concerns about familial history of breast cancer are unaware of the BRCA genetic mutation and testing available. I believe displaying this information in a poster will be able to reach a much wider audience especially helpful being displayed for future nurses to see. It is important for nurses to be educated about the potential risk of this mutation to be able to supply informed education information in the future where necessary.

References:

Ministry of Health. 2015. *Breast Cancer.* Retrieved from http://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/breast-cancer

Whitehead, D. (2013). Searching and reviewing the research literature. In Z. Schneider & D. Whitehead (Eds.). *Nursing and Midwifery Research: Methods and appraisal for evidence-based practice* (4th ed.). (pp.35-56). Chatswood, NSW: Elsevier Australia