Michigan BRFS

Breast and Ovarian Cancer Family History and Genetic Counseling Among Michigan Women

Volume 7, Number 5
November 2013

MICHIGAN BRFSS SURVEILLANCE BRIEF

A NEWSLETTER FROM THE CHRONIC DISEASE EPIDEMIOLOGY UNIT, MDCH

Breast and Ovarian Cancer Genomics Among Michigan Women

Background. Hereditary breast and ovarian cancer (HBOC) syndrome, which causes approximately 10% of breast and ovarian cancers, is most often caused by deleterious mutations in the *BRCA* genes.[1] An estimated 1/300 - 1/800 people carry a *BRCA* mutation, and mutations confer up to an 80% estimated lifetime risk of breast cancer and up to 40% lifetime risk of ovarian cancer.[2] Genetic testing for *BRCA* is not recommended for the general population, but is recommended for high risk individuals based on personal and family cancer history.[3]

Genetic counseling can help determine the appropriateness of *BRCA* testing and its implications. For those with mutations, increased screenings can assist with early cancer detection, and prophylactic medication and surgeries can greatly reduce the risk of breast and ovarian cancer. Healthy People 2020 established an objective to increase the proportion of women with a family history of breast and/or ovarian cancer who receive genetic counseling.[4] The State of Michigan is measuring progress towards this objective by determining the proportion of adult women with a substantial family history of breast or ovarian cancer and the proportion of these women who have received genetic counseling.

Methods. Cognitively tested questions related to breast and ovarian cancer family history and genetic counseling were included within the 2011 and 2012 Michigan Behavioral Risk Factor Surveys (MiBRFS). These data were used to analyze the prevalence of breast and ovarian cancer family history among adult women in Michigan and assess the utilization of breast and ovarian cancer genetic counseling services among Michigan women and their family members. Genetic counseling was defined as "… the process of communication between a specially trained health professional and someone concerned about the risk of disease in his or her family."

The breast cancer family history questions included within the 2011 and 2012 MiBRFS asked about diagnoses of breast cancer among first and second degree relatives; further questions determined the number with breast cancer who were immediate relatives and those who were diagnosed at or before 50 years of age. The ovarian cancer family history questions asked about diagnoses of ovarian cancer among first and second degree relatives at any age. The presence of a substantial family history of breast and ovarian cancer was determined according to calculable components of the 2005 United States Preventive Services Task Force (USPSTF) Grade B recommendation for genetic risk assessment and *BRCA* mutation testing.[3]

Results. The prevalence of breast and ovarian cancer family history among adult women in Michigan was consistent from 2011 to 2012 (Table 1).

In 2012, 11.0% of adult women met USPSTF family history guidelines for further HBOC genetic assessment and possible testing; in 2011, this estimate was 10.4% of adult women.

Genetic counseling status did not significantly differ by age, health insurance status or household income in either year, with the exception of those in the $50,000-$74,999 income range for 2011 who

Table 1. Prevalence of Women With Breast and Ovarian Cancer Family History, 2011 and 2012 Michigan BRFS

	2011 (N = 1,764)		2012 (N = 3,039)	
	%	95% CI	%	95% CI
Relatives diagnosed with breast cancer One or more	37.0	(33.0-41.2)	35.7	(33.4-38.0)
Immediate relatives diagnosed with breast cancer One or more	12.0	(9.5-15.0)	14.1	(12.6-15.7)
Relatives diagnosed with breast cancer ≤ 50 years One or more	18.6	(15.3-22.4)	16.4	(14.7-18.3)
Relatives diagnosed with ovarian cancer One or more	12.2	(9.6-15.3)	14.1	(12.4-15.9)
Met USPSTF criteria* Yes	10.4	(8.2-13.1)	11.0	(9.6-12.6)

* Adult females meeting one of the following USPSTF 2005 criteria:
a) ≥ 2 first degree relatives with breast cancer, one of whom was diagnosed at less than 50 years of age
b) ≥ 3 first or second degree relatives diagnosed with breast cancer at any age
c) ≥ 2 first of second degree relatives diagnosed with ovarian cancer at any age
d) ≥ 1 first or second degree relative diagnosed with breast cancer at any age and ≥ 1 first or second degree relative diagnosed with ovarian cancer at any age

MiBRFSS News

- The 2012 MiBRFS Annual Report was distributed in hard copy and via email in late September. A limited number of hard copies remain and can be requested by sending an email to MIBRFSS@michigan.gov.
- Data collection for the 2013 MiBRFS is progressing as expected and the questionnaire for the 2014 MiBRFS has been finalized.
- Did you miss an issue of *Michigan BRFSS Surveillance Brief?* Back issues are available on our website (www.michigan.gov/brfs).

were less likely to access genetic counseling (Table 2). Only 8.5% and 8.8% of women who met USPSTF guidelines reported having HBOC genetic counseling in 2011 and 2012, respectively (Table 2).

An estimated 22.4% (17.0-29.0) of women who met USPSTF family history guidelines in 2012 had relatives who had HBOC genetic counseling (data not shown). Among those with a family history of breast cancer diagnosed at or before age 50, 23.4% reported that at least one family member had accessed genetic counseling services (Table 3). In 2011, the estimated proportion of family members with genetic counseling among those with relatives diagnosed with ovarian cancer was 26.1%. Although not a significant difference, in 2012 only 15.9% of those with relatives with ovarian cancer reported that at least one relative had HBOC genetic counseling.

Conclusions. The similarity of family history prevalence estimates from 2011 and 2012 suggests that the questions used in this study are capable of providing a consistent recount of breast and ovarian cancer family history among Michigan women.

Unexpectedly, diminished access to genetic counseling was not observed in lower income or uninsured individuals in both 2011 and 2012. This may have resulted from smaller sample sizes within these particular categories.

Although over 10% of adult women met national guidelines for further risk assessment based on their family history of breast and/or ovarian cancer, only a small percentage of these individuals actually had genetic counseling. Furthermore, the proportion of women with a family history of breast cancer at or below age 50 and/or ovarian cancer who reported that any person in their family had these services suggests that the majority of these high-risk family members are also not receiving HBOC genetic counseling.

Efforts to improve genetic counseling rates for both individuals with cancer and for those with suggestive family histories are needed. The Michigan Department of Community Health seeks to increase genetic counseling among high-risk women through policy, provider education and surveillance initiatives.

Table 2. Prevalence of Genetic Counseling for Breast and Ovarian Cancer among Female Respondents, 2011 and 2012 Michigan BRFS

	% (95% CI)	
	2011	2012
Total	**2.1 (1.4-3.0)**	**3.2 (2.4-4.3)**
Age		
18-44	0.9 (0.2-3.3)	2.6 (1.4-4.8)
45-64	2.3 (1.3-4.0)	3.8 (2.6-5.6)
65+	4.3 (2.8-6.6)	3.6 (2.6-5.0)
Health Insurance		
Insured	1.9 (1.3-2.7)	3.0 (2.3-3.9)
Uninsured	3.0 (0.8-10.1)	5.4 (2.1-13.5)
Race/Ethnicity		
White, non-Hispanic	1.2 (1.4-3.3)	2.9 (2.1-3.9)
Black, non-Hispanic	2.9 (1.3-6.1)	4.0 (2.1-7.6)
Household Income		
< $20,000	2.2 (1.1-4.4)	4.8 (2.4-9.1)
$20,000 - $34,999	2.5 (1.2-4.9)	1.8 (1.0-3.2)
$35,000 - $49,999	3.1 (0.9-10.3)	3.1 (1.5-6.6)
$50,000 - $74,999	0.2 (0.1-0.7)	2.8 (1.4-5.5)
≥ $75,000	2.2 (1.1-4.5)	3.4 (2.1-5.3)
Met USPSTF		
Yes	8.5 (4.4-15.9)	8.8 (5.5-13.9)

Table 3. Prevalence of Genetic Counseling for Breast and Ovarian Cancer among Family Members, 2011 and 2012 Michigan BRFS

	% (95% CI)	
	2011	2012
Breast Cancer ≤ Age 50		
One or more relatives	21.8 (14.3-31.8)	23.4 (18.4-29.3)
Ovarian Cancer		
One or more relatives	26.1 (16.4-38.7)	15.9 (11.6-21.6)

References

[1] Claus EB, Schildkraut JM, Thompson WD, Risch NJ. The genetics attributable risk of breast and ovarian cancer. *Cancer* 1996; 77:2318–24.

[2] Petrucelli N, Daly MB, Feldman GL. 2013. Gene Reviews: *BRCA1* and *BRCA2* Hereditary Breast and Ovarian Cancer. http://www.ncbi.nlm.nih.gov/sites/GeneTests/review?db=GeneTests. (October 2013).

[3] U.S. Preventive Services Task Force: Genetic Risk Assessment and *BRCA* Mutation Testing for Breast and Ovarian Cancer Susceptibility: Recommendation Statement. *Ann Intern Med* 2005; 143(5):355-361.

[4] Healthy People 2020. Objective G HP2020. http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=15 . (October 2013).

The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)

The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various health behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and disability. Landline and cell phone interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a raking weighting factor that adjusts for the distribution of the Michigan adult population based on eight demographic variables. All analyses are performed using SAS-callable SUDAAN® to account for the complex sampling design.

Suggested citation: Fussman C, Mange S. Breast and Ovarian Cancer Family History and Genetic Counseling among Michigan Women. *Michigan BRFSS Surveillance Brief*. Vol. 7, No. 5. Lansing, MI: Michigan Department of Community Health, Lifecourse Epidemiology and Genomics Division, Surveillance and Program Evaluation Section, Chronic Disease Epidemiology Unit, November 2013.

Michigan Department of Community Health
MDCH
Rick Snyder, Governor
James K. Haveman, Director