Michigan BRFS

COLORECTAL CANCER FAMILY HISTORY AND GENETIC TESTING AMONG MICHIGAN ADULTS

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A NEWSLETTER FROM THE CHRONIC DISEASE EPIDEMIOLOGY UNIT, MDCH

Colorectal Cancer Family History and Genetic Testing

Background. Individuals with a family history of colorectal cancer (CRC) or adenomatous polyps in one or more first-degree relatives are at increased risk for colorectal cancer and should have early screening.[1] It is recommended that those with a significant family history of CRC or adenomatous polyps begin colonoscopy screening 10 years younger than the youngest age of diagnosis in the family.[2]

Over 5,000 new CRC diagnoses occur among Michigan residents each year.[3] Lynch Syndrome (LS) (or familial colorectal cancer syndromes) is a hereditary cancer syndrome that accounts for 2-4% of all CRC diagnoses (regardless of age at diagnosis or family history).[2] About 5-10% of all CRCs are hereditary, or caused by an underlying gene change (mutation), which may be a new mutation or may have been passed down from one generation to the next.[1] In 2010, a new genomics topic area was added to the Healthy People 2020 objectives to increase the proportion of persons with newly diagnosed colorectal cancer who receive genetic testing to identify LS.[4] The Healthy People 2020 objective is based on the Evaluation of Genomic Applications in Practice and Prevention (EGAPP) finding of sufficient evidence to recommend offering genetic screening for LS to individuals with newly diagnosed CRC to reduce morbidity and mortality in their relatives.[5]

Methods. The MDCH Genomics and Genetic Disorders Section, in cooperative agreement with the Centers for Disease Control and Prevention (CDC) Office of Public Health Genomics, provided financial support for the addition of five questions to the 2010 Michigan Behavioral Risk Factor Survey (MiBRFS) related to personal and family history of CRC and genetic testing for CRC (Figure 1). These questions, asked of adults ages 18 and above, were used to assess 1) the estimated prevalence of personal and family history of CRC, 2) the awareness of genetic testing for CRC, and 3) the interest in having a genetic test to determine disease risk. Population demographics for adults were examined to investigate potential differences between these populations. Other state-added questions on family history collection and practices were examined in relation to these questions.

Figure 1. State-added Questions on Colorectal Cancer Genetic Testing, 2010 Michigan BRFS

- Have you or any of your parents, brothers, sisters, or children ever been diagnosed with colorectal cancer by a doctor, nurse, or other health care professional?
- Have you heard of a genetic test that would determine if the colorectal cancer in your family was inherited?
- To your knowledge, did you or any of your parents, brothers, sisters, or children have a genetic test to determine if the colorectal cancer in your family was inherited?
- Who was it that had the genetic test?
- How likely would you be to have a genetic test to determine if the colorectal cancer in your family was inherited?

Table 1. Prevalence of Personal and/or Family History of Colorectal Cancer among Michigan Adults, 2010 Michigan BRFS

	%	95% CI
Total	**7.5**	**(6.4-8.7)**
Age		
18 - 49	4.0	(2.8-5.6)
50 +	11.9	(10.3-13.8)
Gender		
Male	6.4	(4.9-8.3)
Female	8.5	(7.1-10.1)
Race		
White	7.9	(6.7-9.2)
Black	5.7	(3.2-9.8)
Other	3.7	(1.6-8.1)
Education		
High school or less	7.2	(5.5-9.3)
Some college	8.5	(6.6-10.9)
College graduate	6.9	(5.3-9.1)
Household Income		
$49,999 or less	9.0	(7.3-11.0)
$50,000 +	6.4	(5.0-8.2)
Health Care Coverage		
Yes	7.6	(6.5-8.9)
No	6.9	(3.8-12.3)
Health Status		
Good or better	7.1	(6.0-8.4)
Fair or poor	9.7	(7.1-13.2)

MiBRFSS News

- The 2011 Michigan BRFS Standard Tables will soon be available on the Michigan BRFSS website (www.michigan.gov/brfs). These estimates will be based on the new raking weighting methodology that includes data from both landline and cell phone respondents.
- Additional 2011 Michigan BRFS estimates for selected racial/ethnic populations will be released this summer.
- Did you miss an issue of *Michigan BRFSS Surveillance Brief?* Back issues are also available on our website.

Results. As shown in Table 1, an estimated 7.5% of Michigan adults reported having a personal and/or family history of CRC in 2010. Adults 50 years of age or older were significantly more likely to have reported a personal and/or family history of CRC than those under 50 years of age.

Among adults that had a personal and/or family history of CRC, 80.4% reported having a prior sigmoidoscopy in the past 5 years or colonoscopy in the past 10 years. Only 65.3% of those with no personal and/or family history of CRC reported having one of these tests previously. (Data not shown).

Almost one-quarter (22.0%) of Michigan adults with a personal and/or family history of CRC reported that they had heard of a genetic test for CRC (Table 2). These respondents were primarily young and female although differences were not significant. Of those that had heard of genetic testing for CRC, few knew of a genetic test having been done on themselves or a family member (3.1%). Furthermore, 64.4% responded that they would be somewhat or very likely to have a genetic test to determine if the CRC in their family was inherited (data not shown).

Conclusions. Genetic testing, although not indicated for all, can provide life-saving information for patients and family members and can guide medical management and cancer surveillance recommendations for individuals and families. It is concerning that 20% of high risk individuals do not report having had current CRC screening. Furthermore, new guidelines are recommending colonoscopy (at varying frequencies) for individuals with at least one affected immediate relative; sigmoidoscopy only is no longer considered adequate.[1] Our results also show that nearly 80% of individuals at increased familial risk for CRC report no knowledge of genetic testing for the disease and very few report testing being carried out in the family. Additional provider and patient education is needed.

Current Michigan initiatives to raise awareness include:

- Governor Rick Snyder's Proclamation for Lynch Syndrome Hereditary Cancer Awareness Day on March 22, 2012 (http://www.michigan.gov/snyder/0,4668,7-277-57577_59874---,00.html)
- Development of the Lynch Syndrome Screening Network (LSSN) (www.cgaicc.com/LSSN.aspx) to promote universal screening of all newly diagnosed CRCs.

Based on this Michigan data, only 3% of at-risk adults, aware of genetic testing for hereditary CRC, reported having a genetic test themselves or being aware of testing of a family member. With additional provider educational and health system uptake of universal screening, additional at-risk family members might be identified and adequately screened.

Table 2. Knowledge of a Colorectal Cancer Genetic Test among Michigan Adults with a Personal and/or Family History of Colorectal Cancer, 2010 Michigan BRFS

	%	95% CI
Total	**22.0**	**(16.1-29.3)**
Age		
18 - 49	23.3	(11.1-42.6)
50 +	21.4	(15.7-28.6)
Gender		
Male	18.5	(9.8-32.3)
Female	24.5	(17.4-33.4)
Race		
White	22.4	(16.2-30.3)
Black	---*	---*
Other	---*	---*
Education		
High school or less	28.8	(17.3-43.8)
Some college	16.4	(9.6-26.6)
College graduate	20.6	(11.9-33.4)
Household Income		
$49,999 or less	27.2	(18.4-38.4)
$50,000 +	16.3	(9.1-27.6)
Health Care Coverage		
Yes	18.9	(13.6-25.6)
No	---*	---*
Health Status		
Good or better	20.8	(14.4-29.0)
Fair or poor	27.5	(15.0-44.9)

* Insufficient sample size for analysis (N < 50).

References

[1] American Cancer Society. Colorectal Cancer Early Detection. Accessed June 2012 from http://www.cancer.org/Cancer/ColonandRectumCancer/MoreInformation/ColonandRectumCancerEarlyDetection/index.

[2] National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology . "Colorectal Cancer Screening." Version 2.2012. Retrieved June 2012, from http://www.nccn.org.

[3] Michigan Resident Cancer Incidence File. Updated with cases processed through December 30, 2009. Division for Vital Records & Health Statistics, Michigan Department of Community Health.

[4] Healthy People 2020: Summary of objectives. http://www.healthypeople.gov/2020/topicsobjectives2020/pdfs/HP2020objectives.pdf.

[5] Recommendations from the EGAPP Working Group: genetic testing strategies in newly diagnosed individuals with colorectal cancer aimed at reducing morbidity and mortality from Lynch syndrome in relatives. *Genetics in Medicine* 2009; 11(1): 35-41.

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.

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