

Promoting Cancer Genomics Best Practices in the State of Michigan: A Focus on Surveillance

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SUMMARY

The Michigan Department of Community Health (MDCH) in collaboration with the Centers for Disease Control and Prevention (CDC) has created a multi-faceted, comprehensive cancer genomics program to promote appropriate translation of cancer genetic tests and gene profiling tests into clinical and public health practice.

GOALS



The desired impact of this genomics translation program is an increase in the appropriate use of cancer genetic tests for at-risk persons leading to a reduction of early (under age 50) cancer deaths in Michigan residents.

* Develop and implement a model for cancer genetic **surveillance** and the use of genetic and gene profiling tests for:

- BRCA1
- BRCA2
- MSI
- IHC
- MSH2
- MSH6
- MLH1
- OncotypeDX
- MammaPrint
- H:I Ratio

* Identify model **provider education** programs to increase use of appropriate screening, counseling and evidence-based genetic tests.

* Identify a model **health insurance policy** for BRCA1/2 cancer genetic testing.

METHODS

The target population for this translation program is Michigan residents with or at increased risk for specific cancers, providers, health systems, and health insurance plans.

To achieve program goals, the core project team (director, coordinator, educator, & epidemiologist) partners with:

- Michigan Cancer Surveillance Program (MCSP) and Vital Records staff
- Michigan Cancer Consortium & MDCH Cancer Prevention and Control Section
- Five Cancer Genetics Clinical Facilities
- A Health Plan Champion

There are four main surveillance activities in this project.

* A **retrospective analysis** of cancer registry and mortality data to monitor cancer rates, trends, and mortality of cases most likely to have underlying genetic predispositions (early onset, multiple primary, and male breast cancer) from 1990 to currently available years.

* A **clinical site data collection** process to form a network for collecting and sharing data on breast cancer genetic referrals and use of genetic testing for BRCA1/2.

* A **chart review system** using hospital charts to collect data on provider practices regarding the use of family history, genetic counseling and testing.

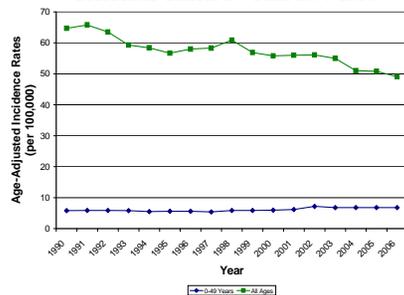
* A **cancer survivors survey** to assess barriers and facilitators to their knowledge and attitudes regarding family health history, genetic counseling and genetic testing.

RESULTS

The retrospective analysis and clinical site data preliminary results are displayed in the section below. The chart review and cancer survivors survey are projects that are ongoing and results are not available at this point in time.

Retrospective Analysis

Michigan Age-Adjusted Incidence Rates for Colorectal Cancer by Year, 1990-2006



From 1990 to 2006 Michigan residents have seen a 25% decrease in colorectal cancer incidence rates. However, when looking only at cancer cases diagnosed before age 50 there has been a slight increase in incidence.

Based on a recently published evidence-based recommendation¹, all individuals with colorectal cancer should have screening for Lynch syndrome to benefit their family members.

Multiple Primaries

Along with individual types of cancer, increased genomic risks exist for people with multiple primary diagnoses of cancer. Thirteen types of primary cancer were investigated.

Between the years 1990 and 2006 there were 22,567 people that had more than one diagnosis of cancers of interest.

- 5,634 had breast-breast
- 4,369 had colorectal-colorectal
- 531 had breast-ovarian
- 167 had ovarian-ovarian
- 517 had colorectal-endometrial
- 227 had colorectal-ovarian
- 198 had endometrial-endometrial
- 480 had ovarian-endometrial

These individuals should be referred for genetic counseling for further evaluation and discussion of genetic testing^{1,2} (ie. BRCA, Lynch).

Clinical Sites Data

Data on patients that had an initial genetic counseling visit recorded in the data base were included in the analysis. If only follow-up data was available the patient was excluded.

Demographic Data from Three Clinical Sites
 October 2007 to October 2009

	Site 1 Number (%)	Site 2 Number (%)	Site 3 Number (%)
Total	299	307	248
Gender			
Male	12 (4.0)	11 (3.6)	5 (2.0)
Female	287 (96.0)	296 (96.4)	243 (98.0)
Race			
White	230 (76.9)	226 (73.6)	194 (78.2)
Black	58 (19.4)	69 (22.5)	19 (7.7)
Other	11 (3.7)	12 (3.9)	35 (14.1)
Ashkenazi Jewish			
Yes	45 (15.1)	14 (4.6)	3 (1.2)
No	254 (84.9)	293 (95.4)	245 (98.8)
Personal History of Cancer			
Yes	168 (56.2)	190 (61.9)	145 (58.5)
No	131 (43.8)	117 (38.1)	103 (41.5)
Family History of Cancer			
Yes	284 (95.0)	285 (92.8)	239 (96.4)
No	15 (5.0)	22 (7.2)	9 (3.6)

Between the three sites there were a total of 854 individuals that sought genetic counseling services in the two-year period. The majority were female (96.7%) and white (76.1%). Most had either a personal history of cancer (58.9%) or a family history of cancer (94.6%). The fourth site was not included in this analysis due to the fact they have 1 year of data collected and entered compared to 2 years.

CONCLUSION

The cancer genomics best practices project will provide methods and models that serve as a foundation for other states and federal agencies working to translate evidence-based guidelines into health practice. In addition, the data collected will help to provide baseline measures for two recently proposed Healthy People 2020 objectives that align with the program goals:

- Increase the proportion of persons with newly diagnosed colorectal cancer (CRC) who receive genetic testing to identify Lynch syndrome (or familial CRC syndromes)
- Increase the proportion of women with a family history of breast and/or ovarian cancer who received genetic counseling.

REFERENCES

1. Palomaki GE et al. EGAPP supplementary evidence review: DNA testing strategies aimed at reducing morbidity and mortality from Lynch syndrome. *Genet Med* 2009; 11:42-65.
2. US Preventive Services Task Force. Genetic Risk Assessment and BRCA Mutation Testing for Breast and Ovarian Cancer Susceptibility: Recommendation Statement. *Ann Intern Med* 2005 Sep 6; 143:355-361.