

**Potential health or intermediate outcomes for MDCH Cancer Genomics Translation
September 2012**

| Surveillance Outcomes | Data Source(s) | Reporting | Data Findings |
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| Number and percentage of female patients seen by sentinel clinical genetics services sites that receive genetic counseling for <i>BRCA</i> that follow USPSTF recommendations | Clinical Cancer Genetic Sites | | <ul style="list-style-type: none"> • Analysis of ten submitting clinics reveals that 853 (45.9%) of 1,860 unaffected women without a known familial mutation prior to counseling met the USPSTF suggested family history criteria for referral. |
| Number and percentage of female patients receiving genetic counseling for BRCA and not pursuing genetic testing because of inadequate insurance coverage | Clinical Cancer Genetic Sites | | <ul style="list-style-type: none"> • Of the 5,876 patients submitted from Oct. 1, 2007 through March 31, 2011, 1,720 (29.2%) did not have testing; of these, 243 (14.9%) did not pursue testing because of inadequate insurance coverage. • The number and % of female patients receiving genetic counseling for BRCA and not pursuing genetic testing because of inadequate insurance coverage has decreased from 16.7% in 2007-2009 to 9.7% in 2011. |
| Number and percentage of patients receiving genetic counseling for BRCA and not pursuing genetic testing because of not being the best test candidate | Clinical Cancer Genetic Sites | | <ul style="list-style-type: none"> • 1,720 unaffected patients presented for counseling and did not have testing. Of these, 477 (29.2%) did not pursue testing because they were not the best test candidate in their family. |
| Number and percentage of colorectal cancer patients identified in a sample of the state cancer registry as having received genetic testing or pre-testing for Lynch syndrome | MCSP chart audits | MCSP chart audits data reported in 2011 | <ul style="list-style-type: none"> • 6 out of 610 (1.0%) colorectal cancer charts reviewed had MSI Testing • 5/610 (.82%) had MMR • 11/610 (1.8%) had IHC • 0/610 (0%) had BRAF |
| Number and percentage of ovarian cancer patients identified in a sample of the state cancer registry as having received genetic counseling and/or testing for BRCA | MCSP chart audits | MCSP chart audits data reported in 2011 | <ul style="list-style-type: none"> • 5 out of 137 (3.6%) ovarian cancer charts reviewed had genetic counseling • 10 out of 137 (7.3%) ovarian cancer charts reviewed had BRCA testing |

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| Number and percentage of breast cancer patients identified in a sample of the state cancer registry as having received genetic counseling and/or testing for BRCA | MCSP chart audits; MCSP cancer survivor survey | MCSP chart audits data reported in 2011; MCSP YBCS cancer survivor data reported in 2011 | <ul style="list-style-type: none"> • 16 out of 837 (1.9%) breast cancer charts reviewed had genetic counseling; • 18 out of 837 (2.2%) breast cancer charts reviewed had BRCA testing • Of 289 YBCS surveyed, 122 (42.2%) had genetic counseling and 121 (41.8%) had <i>BRCA</i> testing |
| Number and percentage of breast cancer patients identified in a sample of the state cancer registry as having received gene expression profiling (GEP) | MCSP chart audits; MCSP cancer survivor survey | MCSP chart audits data available in July 2011; MCSP YBCS cancer survivor data reported in 2011 | <ul style="list-style-type: none"> • 75 out of 837 (9.0%) breast cancer charts reviewed had Oncotype DX; • 3 out of 837 (0.4%) breast cancer charts reviewed had MammaPrint; • 2 out of 837 (0.2%) breast cancer charts reviewed had H:I ration testing • Of 289 YBCS surveyed, 69 (23.8%) reportedly had GEP; and 162 (56%) did not know if GEP testing was performed |
| Number and percentage of early onset breast cancer with strong family history not receiving genetic counseling because of lack of awareness of services | MCSP cancer survivor survey | MCSP YBCS cancer survivor data reported in 2011 | <ul style="list-style-type: none"> • 158 of 289 (54.7%) YBCS that met NCCN had not received BRCA genetic counseling • 92 of the 158 YBCS (58.2%) women that met NCCN counseling guidelines reported that no one had recommended counseling (which was most common barrier identified to receiving genetic services) |
| Number and percentage of early onset breast cancer with strong family history not receiving genetic counseling because of inadequate insurance coverage | MCSP cancer survivor survey; clinical cancer genetic sites | MCSP YBCS cancer survivor data reported in 2011 | <ul style="list-style-type: none"> • 37 of the 158 (23.4%) YBCS that met NCCN counseling guidelines reported that they did not receive counseling because of medical insurance coverage issues |
| Percentage of colon cancer patients and family members not receiving genetic testing for Lynch syndrome because of lack of awareness of test | 2010 MiBRFS | MiBRFS data reported in 2011 | <ul style="list-style-type: none"> • Only 22.0% of Michigan residents with a personal and/or family history of colorectal cancer had heard of a genetic test that determines if the colorectal cancer in their family was inherited |

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| <p>Estimated prevalence/percentage of adult women in the state without personal history and with family history of breast and/or ovarian cancer who received cancer genetic counseling</p> | <p>MiBRFS</p> | <p>MiBRFS 2008 data reported in 2010; MiBRFS 2009 data reported in 2012</p> | <ul style="list-style-type: none"> • 8.8% of Michigan adult women surveyed in 2008 and 7.9% in 2009 identified as having a strong family history of breast and/or ovarian cancer without a personal history require a referral for genetic counseling; 10.4% of Michigan adult women surveyed in 2010 had significant family history as defined by USPSTF; 7% of Michigan adults surveyed in 2010 met at least one NCCN guideline for cancer genetic risk assessment • Of these adult women, 18% received genetic counseling among those surveyed in 2008 and 35.7% in 2009; of women who met USPSTF, 36.1% surveyed in 2010 had received cancer genetic counseling herself and/or family member; of adults who met NCCN, 27.3% surveyed in 2010 had received cancer genetic counseling self and/or family member |
| <p>Estimated prevalence/ percentage of adult women in Michigan without personal history and with family history of breast and/or ovarian cancer who received genetic testing</p> | <p>MiBRFS</p> | <p>MiBRFS 2008 data reported in 2010; MiBRFS 2009 data reported in 2012</p> | <ul style="list-style-type: none"> • Of adult women without personal history and with family history of breast and/or ovarian cancer, 4.9% received genetic testing of those surveyed in 2008 and 9.8% of those surveyed in 2009 |
| <p>Determine feasibility of documenting number of colorectal cancer patients diagnosed in 2009 and insured by the state Medicaid program provided with genetic testing or pre-testing for Lynch, using Medicaid claims data with a combination set of CPT and ICD9 codes and provider information, given that no CPT codes are available for genetic tests</p> | <p>Medicaid data; key informant interviews</p> | <p>Reported in 2011</p> | <p>Does not appear to be feasible at this time to conduct surveillance using CPT and ICD codes for Lynch syndrome testing on colorectal cancer patents</p> |
| <p>Estimated prevalence/percentage of adult women with a family history of breast and/or</p> | <p>MiBRFS</p> | <p>MiBRFS 2008 data reported in 2010</p> | <ul style="list-style-type: none"> • Of adult women without personal history of breast and/or ovarian cancer, 64.6-68.1% of |

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| <p>ovarian cancer compared to those without a family history who received mammograms</p> | | | <p>those with family history had ever had mammogram compared to 63.9% without family history</p> <ul style="list-style-type: none"> • Of adult women without personal history of breast and/or ovarian cancer, 41.5%-47.7% of those with family history had mammogram in past year compared to 39.9% without family history |
| <p>Estimated prevalence/percentage of women with a family history of breast and/or ovarian cancer compared to those without a family history who meet HHS-USDA guidelines for obesity and being overweight using BMI</p> | <p>MiBRFS</p> | <p>MiBRFS 2008 data reported in 2010; MiBRFS 2009 data reported in 2011</p> | <ul style="list-style-type: none"> • Of adult women without personal history of breast and/or ovarian cancer, 65% of those with family history were overweight compared to 60.1% without family history based on 2008 results; 70.6% of those with family history compared to 58.5% without based on 2009 results • Of adult women without personal history of breast and/or ovarian cancer, 34.3% of those with family history were obese compared to 30.5% without family history based on 2008 results; 39.1% of those with family history compared to 30.8% without based on 2009 results |
| <p>Estimated prevalence/percentage of women with a family history of breast and/or ovarian cancer compared to those without a family history who report unhealthy behaviors (i.e. smoking, binge drinking, physical inactivity)</p> | <p>MiBRFS</p> | <p>MiBRFS 2008 data reported in 2010; MiBRFS 2009 data reported in 2011</p> | <ul style="list-style-type: none"> • Of adult women without personal history of breast and/or ovarian cancer, 24% of those with family history were current smokers compared to 17.6% without family history in 2008; 28.9% of those with family history compared to 15.7% without based on 2009 MiBRFS • Of adult women without personal history of breast and/or ovarian cancer, 11.7% of those with family history were binge drinkers compared to 12.4% without family history |

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| | | | <p>based on 2008 MiBRFS; 13.4% of those with family history compared to 10.5% without based on 2009 MiBRFS</p> <ul style="list-style-type: none"> • Of adult women without personal history of breast and/or ovarian cancer, 56.5% of those with family history were physically inactive compared to 49.8% without family history in 2008 MiBRFS; 44% with family history compared to 50.2% without in 2009 MiBRFS |
| Estimated number/percentage of Michigan adults and their family members with colorectal cancer in representative samples of the population that received genetic testing | MiBRFS | Reported in 2011 | <ul style="list-style-type: none"> • 3.1% of Michigan residents with a personal and/or family history of colorectal cancer have received genetic testing |
| Estimated prevalence/percentage of Michigan adults with colorectal cancer and/or a family history of colorectal cancer compared to those without a personal or family history who report unhealthy behaviors (i.e. smoking, binge drinking, physical inactivity) | MiBRFS | Reported in 2011 | <ul style="list-style-type: none"> • Current smoker: 9.4% with CRC history vs 18.5% no hx (not significant) • Binge drink: 10.3% with CRC history vs 16.5% with no hx (not significant) • Physical inactivity: 25.8% with CRC history vs. 24.0% with no hx (not significant) |
| Estimated prevalence/percentage of Michigan adults with colorectal cancer and/or a family history of colorectal cancer compared to those without a personal or family history who meet HHS-USDA guidelines for obesity and being overweight using BMI | MiBRFS | Reported in 2011 | <ul style="list-style-type: none"> • Overweight: 38.9% with CRC hx vs. 36.3% no hx (not significant) • Obese: 36.0% with CRC hx vs. 31.3% with no hx (not significant) |
| Estimated prevalence/percentage of adults (50 years of age and over) with a family history of colorectal cancer compared to those without a family history who received colorectal cancer screening | MiBRFS | Reported in 2011 | <ul style="list-style-type: none"> • 80.4% with a personal or family history compared to 65.5% without a personal or family history of colorectal cancer received colorectal cancer screening (differences are significant) |

| Provider Education Outcomes | Data Source(s) | Reporting | Data Findings |
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| Number and percentage of all medical offices, clinics and hospitals (NPCR) reporting to the Michigan Cancer Surveillance Program in the state that have received institution specific data and educational materials about the use of <i>BRCA</i> genetic testing consistent with USPSTF recommendation | MDCH Genomics | Reporting to start in September 2010 | <ul style="list-style-type: none"> • 52 of 108 NPCR reporting facilities in Michigan received (48.1%) in year 2 • 107 of 108 NPCR (99.07%) reporting facilities in Michigan received by end of year 3 • 38 of SEER reporting facilities in Michigan received in 2012 |
| Number and percentage of all medical offices, clinics and hospitals (NPCR) reporting to the Michigan Cancer Surveillance Program in the state that have received institution specific data and educational materials about the use of genetic testing for Lynch syndrome consistent with EGAPP recommendations | MDCH Genomics | Reporting to start in September 2010 | <ul style="list-style-type: none"> • 52 of 108 NPCR reporting facilities in Michigan received (48.1%) in year 2 • 107 of 108 NPCR (99.07%) reporting facilities in Michigan received by end of year 3 • 38 of SEER reporting facilities in Michigan received in 2012 |
| Number and percentage of all medical offices, clinics and hospitals (NPCR) reporting to the Michigan Cancer Surveillance Program in the state that have received educational materials about the use of gene expression testing for breast cancer | MDCH Genomics | Reporting to start in September 2010 | <ul style="list-style-type: none"> • 52 of 108 NPCR reporting facilities in Michigan received (48.1%) in year 2 • 107 of 108 NPCR (99.07%) reporting facilities in Michigan received by end of year 3 • 38 of SEER reporting facilities in Michigan received in 2012 |
| Number of healthcare providers in the state provided with educational training to increase knowledge about USPSTF guidelines for <i>BRCA</i> | MDCH Genomics | Reporting to start in 2011 | |
| Number of healthcare providers in the state who are provided with educational training to increase knowledge about EGAPP guidelines for genetic testing for Lynch syndrome | MDCH Genomics | Reporting to start in 2011 | |

| Health Plan Policy Outcomes | Data Source(s) | Reporting | Data Findings |
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| Number and percentage of health plans and/or insurance companies that provide coverage for <i>BRCA</i> genetic testing consistent with USPSTF recommendations | Michigan Health Plan Written Policies | Annually starting in 2008 | <ul style="list-style-type: none"> • In Year 1, 4 of 24 health plans aligned with USPSTF recommendations (16.6%) • In Year 2, 12 of 24 health plans had written policies; 9 of 24 (37.5%) aligned with USPSTF recommendation • In Year 3, 15 of 24 health plans with written policies, 12 aligned with USPSTF (50%) recommendation • In 2012, 17 of 25 health plans with written policies, 14 aligned with USPSTF (56%) recommendation |
| Number and percentage of health plans and/or insurance companies that provide coverage for genetic testing for Lynch syndrome consistent with the Evaluation of Genomic Applications in Practice and Prevention (EGAPP) Working Group recommendations | Michigan Health Plan Written Policies | Annually starting in 2010 | <ul style="list-style-type: none"> • 0 of 24 health plans in 2010 • 0 of 24 health plans in 2011 and 2012 aligned EGAPP recommendation |
| Number and percentage of all health plans and/or insurance companies in the state that have received educational materials about the use of <i>BRCA</i> genetic testing consistent with USPSTF recommendation | MDCH Genomics | Reporting to start in October 2010 | <ul style="list-style-type: none"> • 24 of 24 (100%) of health plans received educational materials regarding <i>BRCA</i> in Year 2 and 3 |
| Number and percentage of female adult covered lives in Michigan able to receive <i>BRCA</i> counseling and testing by appropriate family history criteria | Michigan Health Plans | To report in 2011 | Over 8.5 million Michigan residents (>85%) are covered by 14 health plans with written policies aligned with USPSTF |