recommendations? Do patients act on recommendations? Are there barriers to action and are there improved outcomes? One established barrier is the time to obtain a pedigree and knowledge basis for interpretation. Options for obtaining and interpreting a family history are necessary due to these barriers. We examined the use of tumor registry data as a cost effective option for providing family history, and age information. **Methods:** The tumor registry data were examined to identify women that were diagnosed with breast cancer between 2004-2008. These data were then substratified for age and family history. A family history was considered positive if it met the US Preventative Health Task Force criteria for breast cancer. The EMRX allowed identification of patients who had genetic counseling and or testing recommended and how many patients followed up on those recommendations. **Results:** Between 2004-2008 there were 1,594 patients with a newly diagnosed breast cancer. Of these, 113 had no information (7%). There were 1,112 (75%) that had at least one 1st or 2nd family member with a significant malignancy. There were 61 patients that met criteria for a positive family history. Fourteen patients were at or below age 50, and 47 over age 50. Of the 61 patients, 37 (60.7%) were offered genetic counseling and/or testing. **Conclusions:** The tumor registry data did identify individuals with a positive family history of breast cancer and was cost effective. In conjunction with the EMRX, it is possible to see if the appropriate recommendations were made and whether individuals followed the recommendations. These individuals present opportunities for future research in barriers to care, and biomarker research in individuals with a familial risk.

Keywords: Tumor Registry, Personalized medicine, Family history screening

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PS1-13:

Using the PMRP Cohort to Develop a Model for Incorporating Genetic and Environmental Factors into Prostate Cancer Screening Decisions

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Background: Prostate cancer screening with PSA has decreased the average age of prostate cancer detection and increased the number of men who undergo prostate biopsies. Currently two thirds of the prostate biopsies performed due to a high PSA test are negative for prostate cancer leading to unnecessary expense and distress for the individual. One way to decrease the unnecessary procedures associated with PSA screening would be to identify individuals who are either at increased or reduced risk of prostate cancer using newly discovered genetic and environmental risk factors. **Aims:** Using the males in the Personalized Medicine Research Project (PMRP) population that have had a PSA test, determine if genetic and environmental factors can be incorporated into the PSA screening model to better discriminate individuals who will have a diagnosis of prostate cancer from those with negative biopsies. **Methods:** Individuals in PMRP who were diagnosed with prostate cancer (N=466) were compared with the entire Marshfield Clinic population to determine cancer screening characteristics such as rate of PSA screening and average age at cancer diagnosis. All men in PMRP who have had a PSA test (N=4659) were genotyped for at least 12 polymorphisms that have been associated with prostate cancer in GWAS studies and dietary history was collected if available. **Results:** Individuals diagnosed with prostate cancer in the PMRP population tend to have more PSA tests prior to diagnosis than the general population (an average of 7) with 69% (N=320) having at least one PSA test prior to a prostate biopsy. A total of 935 of the 4659 men in the study have had a prostate biopsy with a positive biopsy rate of 34%. Using a panel of 12 previously identified polymorphisms; seven were significantly associated with prostate cancer in our population. Individuals with 1 or fewer risk alleles (15.6% of the population 146 of 935) were less likely to have a diagnosis of prostate cancer on biopsy (OR 1.6). **Conclusions:** The PMRP population that has experienced at least one PSA screen is a viable population for testing new screening algorithms that incorporate genetic and environmental factors for better identification of prostate cancer risk.

Keywords: Prostate cancer screening, PSA screening, Genetic and environmental risk factors

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PS1-14:

Utilization and Effectiveness of KRAS Testing for Colorectal Cancer

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Background: New genomic and personalized medicine (GPM) applications have the potential to enhance our ability to screen for disease predisposition and treatment responsiveness. Surveying colorectal cancer (CRC) tissue for mutations in the KRAS gene is one such test that can help decide how to treat patients with metastatic colorectal cancer (mCRC). KRAS testing provides an opportunity for oncologists to tailor the use of anti-EGFR therapy to increase treatment effectiveness and potentially minimize adverse events. The FDA has recently changed the labeling of anti-EGFR therapies to indicate that it is not effective for the treatment of patients with KRAS mutations. KRAS testing has already become standard clinical practice in many settings. In this study, we will assess the patterns of diffusion and utilization of KRAS testing and evaluate the characteristics of patients, providers, and health systems as they relate to the uptake of KRAS testing. We will also conduct a comparative analysis of KRAS testing for mCRC patients treated in community practices to evaluate its effectiveness in terms of both progression-free survival and overall survival. **Methods:** This study will include a total of 800 mCRC cases diagnosed between January 1, 2005 and July 31, 2010 from 7 HMORN sites. Using electronic records at each site, we will capture information on relevant patient characteristics including disease characteristics, comorbidities, history of all cancer-directed therapies, acute complications, receipt of palliative care and contextual socioeconomic variables. We will use chart review to supplement, or in some cases verify, the electronic data. **Conclusion:** The study will serve as a model for evaluating the potential impact of GPM applications to improve health outcomes, reduce costs, and influence patient and physician decision-making in the area of personalized therapies.

Keywords: KRAS testing, Patient treatment, Genomic and personalized medicine applications

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Cancer

C-B2-01:

A Panel of Markers with Potential Clinical Diagnostic Application

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Background and Aims: Distinguishing low/intermediate grade neuroendocrine carcinoma (carcinoid and atypical carcinoid) from a high grade neuroendocrine carcinoma [small cell carcinoma and large cell neuroendocrine carcinoma (LCNEC)] of the lung can be difficult, especially in small biopsy specimens. Patients diagnosed with a low/intermediate grade carcinoma would be treated surgically while patients diagnosed with small cell carcinoma with chemotherapy. Biomarkers may increase the diagnostic accuracy. **Methods:** We studied 42 consecutive cases of neuroendocrine tumors of the lung (20 small cell carcinomas, 7 large cell neuroendocrine carcinomas, 12 carcinoids and 3 atypical carcinoids) with the objective of comparing the expression of the panel of biomarkers (CD117, KOC, Ki-67, pVHL and p16) between the low and high grade neuroendocrine tumors of the lung. Tissue microarrays were constructed and expression of each biomarker was evaluated using immunohistochemistry. Staining was standardized and scored as "0" = Negative, "1+" = Focal, "2+" = 30 -49% cells staining and "3+" = 50-100% cells staining positively. For the purpose of the present study, a specimen scored as "0" or "1+" was classified as negative, while a specimen scored as "2+" or "3+" was considered positive. In estimating the likelihood of expression of the biomarkers, specimens were

categorized into low grade and high grade. Two-sided non-parametric statistical analyses were performed using the SAS v. 9.3 (SAS Institute, Cary, NC). **Results:** Expression of KOC, p16, pVHL and Ki67 was significantly different between low and high grade tumor categories. No significant difference was observed for CD117. High grade tumors showed greater expression of Ki-67 (OR=13.85, 95% CI 3.34-57.47, $p=0.0003$), p16 (OR=3.52, 95% CI 1.75-7.11, $p=0.0004$) and KOC (OR=4.24, 95% CI 1.88-9.56, $p=0.0005$) while pVHL expression was less in high grade tumors (OR=0.31 95% CI 0.12-0.84, $p=.022$). We detected a statistically significant probability of joint overexpression of three of the biomarkers [p16 and KOC and Ki-67] in small cell carcinoma relative to atypical carcinoids (OR=2.53, 95% CI 1.24-5.17, $p=.011$). **Conclusions:** Findings from this pilot project suggest that Ki-67, KOC and p16 are an effective antibody panel in differentiating high grade neuroendocrine carcinoma from low/intermediate grade neuroendocrine carcinoma.

Keywords: Distinguishing grades of carcinoma, Biomarkers, Diagnostic accuracy

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C-C3-01:

Adolescent and Young Adult Cancer Survivors in the Cancer Research Network

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Background and Aims: Adolescents and young adults (AYA) with cancer face unique challenges related to their stage of physiological and psychosocial development, yet their diagnosis, treatment, and survivorship experiences remain poorly understood. To ascertain the CRN's potential to address these issues, we examined the characteristics of and available follow-up time among AYA diagnosed with cancer at two CRN sites. **Methods:** Using the CRN's Virtual Data Warehouse cancer registry files, we identified all individuals diagnosed with their first primary invasive cancer at ages 15 to 39 years from 1992 to 2007 at one site and 1996 to 2007 at the other. Next, we extracted demographic, vital status, and tumor data, categorizing tumor type using the combined childhood (ICCC) and adult (ICD-O3) classification approach from the SEER 2006 AYA cancer epidemiology report. We used administrative data to calculate post-cancer enrollment through September 2009. To address potential variations in enrollment patterns and pediatric to adult care transitions, we stratified the vital status and follow-up data into ages 15 to 24 years and 25 to 39 years. **Results:** We identified 7,121 AYA with incident cancer, of whom 4,424 (62%) were female and 2,820 (40%) were non-white. Common tumor types included breast (n=1,391, 20%); lymphoma (n=996, 14%); thyroid (n=858, 12%); genital (female, n=798, 11%; male, n=720, 10%); leukemia (n=327, 5%); and central nervous system (n=315, 4%). Among the 1,194 (17%) individuals diagnosed at ages 15 to 24 years, 955 (80%) were alive through the follow-up period; the median enrollment after diagnosis was 3.5 years (interquartile range [IQR] 1.5 to 6.6). Among the 5,927 (83%) individuals diagnosed at ages 25 to 39 years, 4,682 (79%) were alive through the follow-up period; the median enrollment after diagnosis was 4.2 years (IQR 1.7 to 8.0). **Conclusions:** Within two CRN sites we were able to identify a sizable, racially diverse group of AYA cancer survivors who remained enrolled and thus could be followed for several years after diagnosis. The CRN provides a unique setting in which to explore contemporary AYA cancer survivorship issues in the short-term, collect prospective long-term data, and test relevant interventions.

Keywords: Adolescent and young adult cancer, Survivorship, Cancer treatment and diagnosis

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C-C3-02:

Ethnic Differences in Interval Diagnosed Breast Cancers in South Carolina

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Background/Aims: The incidence of breast cancer (BrCA) among African-American (AA) women is lower than European-American (EA) women, yet their mortality rate is twice as high. Numerous hypotheses have been proposed to explain this disparity ranging from the biological to factors related to access to care. The relatively under-studied area of interval-diagnosed BrCAs, tumors which arise between regular mammograms and represent one of the most aggressive types of tumors, among AA women may represent such a biological factor. The goal of this investigation was to describe and compare detection patterns of BrCAs and their related histopathology among AA and EA women in South Carolina. **Methods:** A longitudinal file on 65,766 women was created with multiple clinic visits representing each mammography or diagnostic service performed and the final findings of these procedures. Women with a malignancy diagnosis were classified as cases provided they had an abnormal screening and were subsequently found to have histopathologically-confirmed malignancies. Interval cancers were defined as those that occurred between regular screenings of the American Cancer Society recommended 1-2 years. After electronic identification of the interval cancers, the actual mammography films from each interval cancer case were combined with a random sampling of negative and positive films and underwent a "blinded" review by a radiologist. Chi-square and t-tests were used to assess for differences between AA and EA women and between screen-detected and interval-detected malignancies. Polytomous regression was also employed to describe and compare patterns of BrCA detection among our cohort of women. **Results:** Among the study population, AA women were more likely to be younger than EA women. AA women were also more likely to have poorly differentiated tumors and to have interval-detected malignancies. Variables found to be significantly associated with interval cancers included age and marital status. Furthermore, AA women were found to be at a 1.8 times higher risk of interval-detected cancers than EA women. **Conclusions:** Taken as a whole, these results indicate that the characterization of interval-detected tumors among AA women may prove to be a promising avenue to help explain ethnic disparities in BrCA and offer an opportunity for medical intervention such as increased screening guidelines.

Keywords: Breast Cancer, Ethnic disparities, African American women

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C-C3-03:

Indicators of Lifetime and Annual Mammography Screening in the Brazos Valley

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Background and Aims: Early detection and treatment of breast cancer is associated with reduced cancer mortality. While these preventive strategies are still seen as beneficial, new guidelines have recently been announced for the recommended timing of mammogram screenings for various age groups. This study examines patterns of mammogram use in 2006 and examines the relationship between demographic, health status, and healthcare access factors. **Method:** Survey instruments were mailed to a random sample of households in the seven county region of the Brazos Valley in Texas (n=1,935). Data were analyzed from a sample of 617 adult females age 40 and older. Study variables include: age groupings (i.e., 40-49, 50-74), education, race/ethnicity, residence rurality, self-reported health status, depression scale scores (5 items, $\alpha=0.802$), having had a visit with a medical