PS1-11:

Development of an Algorithm to Classify Colonoscopy Indication Using CRN Health Plan Coded Data

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Background/Aims: Colonoscopy is widely used for colorectal cancer (CRC) screening, surveillance, and diagnosis. To assess colonoscopy utilization, effectiveness, and safety, it is important to distinguish between these indications. Administrative data sources have the advantage of representing real world colonoscopy utilization, but because the codes are primarily intended for billing, it is challenging to identify the reason for the procedure in these data, especially with large datasets. Several studies using administrative data have applied procedure and diagnostic code-based algorithms to classify colonoscopy indication. However, none have demonstrated simultaneously high sensitivity and specificity. The current study uses adjudicated medical records at 4 CRN sites to evaluate the test characteristics of existing algorithms, develop a new algorithm, and compare performance of existing algorithms with the new algorithm. **Methods:** The study included 716 subjects, patients of 4 large health care organizations. Subjects' records were reviewed and adjudicated as part of a late-stage CRC case-control study conducted concurrently with this analysis. Cases were 55 years or older at diagnosis in 2006 through 2008; controls were age-matched to cases. Medical records were abstracted and adjudicated to assign indication for 465 colonoscopy procedures. We first tested the performance of 5 published algorithms. We then identified a superset of candidate predictor variables, which we selected from the published algorithms. We entered the variables in a LASSO prediction model, using the subject-level coded data for values of the predictors, and subjects' colonoscopy outcomes. LASSO is a backwards-selection multiple logistic regression, designed to protect against model over-fitting. The covariates retained by the new model were used to construct a Receiver Operator Curve (ROC) displaying the model's sensitivity at each increment of specificity. **Results:** The existing algorithms had sensitivities and specificities of 65/74%, 60/77%, 74/58%, 77/58%, and 51/30% for classifying CRN data. The ROC curve of the new algorithm encompassed these values, indicating higher sensitivity at each level of specificity than the existing algorithms. For example, at a sensitivity of 80%, specificity was approximately 70%; at sensitivity of 70%, specificity was about 82%. **Discussion:** The new algorithm will allow more accurate classification of colonoscopy indication in CRN data than do existing algorithms.

Keywords: Colorectal Cancer; Methods; Cancer

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PS1-12:

Suspicious Mammogram (BIRADS 4) Outcome and Breast Biopsy: Preliminary Findings from a Cohort of 6,198 Women

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Background: Annually about 1,700,000 women undergo breast biopsies with an estimated cost of \$3.5 billion. About 80% of women are diagnosed with benign conditions (BCs). Other concerns are psychological impact and possible complications of radiographic evaluation of future mammograms. A recent report in the New York Times described the high rate of breast biopsies as diagnostic overkill, drastic and expensive. We report the preliminary findings on pathologic outcomes and predictive probability of sub-classifications of Breast Imaging Reporting and Data System-4 (BIRADS 4). **Methods:** We identified a total of 6,198 women with mammographic classification of BIRADS 4 between 1/1/2009-10/31/2011. So far, demographic, clinical and pathology data have been retrieved for a total of

624 women. Women were broadly stratified by their pathologic outcome into BCs of no clinical significance, proliferative conditions (PCs), and malignant lesions (MLs). Only final pathologic diagnosis was considered. All statistical analyses were performed using SAS v. 9.1. **Results:** A total of 157 women had opted against biopsy and therefore were excluded from further analysis. Of the remaining 467 women, 68.6% (n=322) were diagnosed with BCs, 9.6% (n=45) with PCs, and 21.3% (n=100) with MLs. Women diagnosed with MLs were older (63.5 ± 13.7) than women with PCs (61.5 ± 13.6) or women with BCs (56.2 ± 11.6) ($P < .001$). The difference in distributions of the other risk factors, breast density, family history, previous biopsy, use of postmenopausal hormones or body mass index, did not reach statistical significance among the 3 groups. A total of 104 women were sub-classified into 4A (n=65), 4B (n=16) and 4C (n=23). Our initial multivariate logistic regression suggested no statistically significant difference in the risk of breast cancer between women in 4A and 4B classification ($P = .35$). Final analysis suggested older age (OR=1.08, 95% CI 1.02-1.10, $P = .01$) was the best predictor of 4C. Our analysis yielded cancer predictive probability (PPV) of 0.13 (± 0.09) for 4A, 0.31 (± 0.16) for 4B and (0.76 ± 0.17) for 4C. **Discussion:** The rate of breast biopsy most likely will remain unchanged, given the present PPVs for 4A and 4B, unless other less invasive but as valid methods are developed.

Keywords: BIRADS-4; Biopsy Subclassification; Cancer

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PS1-13:

Information Seeking Behavior Among Cancer Patients of an Integrated Healthcare Delivery System: What is Needed and in What Format?

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Background/Aims: Effective communication during cancer care is critical for good health outcomes. Understanding what information patients look for and from whom is necessary to ensure their information needs are met. This study examined health information seeking behavior of KPCO members diagnosed with cancer and explored how ethnicity, race, age, cancer type, gender, and educational level are related to choices of health information content, sources, and format. **Methods:** A retrospective cohort of KPCO members who were diagnosed with cancer from 1 January to 31 December 2010 and able to speak and understand English and/or Spanish were identified. Members were sent a cover letter, postage-paid return envelope, and a questionnaire asking about cancer type, sources used for cancer-related health information after diagnosis, preferences about various ways of receiving cancer-related health information, and demographics. Two weeks after the original mailing, a reminder postcard was sent to non-respondents. **Results:** Twelve hundred sixty-four questionnaires were mailed; 48 were returned due to invalid addresses; 19 were ineligible and 608 were returned completed. Fifty-five percent of respondents were female; approximately 9% identified as being Hispanic, the overwhelming majority was White. The mean age was 60.7 (SD=12.8). Eighty percent of all respondents preferred to receive health information via printed materials followed by electronic formats such as the internet and email. Differences were observed when results were stratified by age. Individuals 60 or younger preferred to find cancer related health information via the internet; whereas individuals over 60 speaking with a doctor or member of their healthcare team was preferred. When looking for information related to their cancer diagnosis, the majority (83.0%) sought disease specific information. Approximately 88% reported they were able to find the information they needed. Those who were unable to find all the information they needed stated they wanted more information on treatment options, side effects of treatment, possibility of recurrence, support groups/blogs, chances of developing other types of cancer, available clinical trials, assistance with co-pays, and nutrition advice. **Discussion:** The results of this study highlight the importance for having cancer related health information in a multitude of formats to meet the patients' preferences and needs.

Keywords: Patient-Centered Communication; Qualitative Methods; Cancer

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