Background/Aims: Informatics for Integrating Biology and the Bedside (I2B2) is a data querying tool enjoying increased use among HMORN members. While I2B2 uses standard software and includes installation documentation from the developers, many parts of the installation and configuration process are challenging to implement. Simplifying the initial setup removes a significant barrier to adoption. **Methods:** A combination of simplifying assumptions (limiting choices) and scripts (reducing manual file edits) were developed to reduce time-consuming and error-prone steps in the I2B2 installation process. **Results:** Following the procedure developed, a new I2B2 installation can be a predictable and straightforward process. **Conclusions:** Simplifying the installation and initial configuration of the I2B2 infrastructure provides multiple benefits. If your organization is new to I2B2, you will be able to reach the goal of using I2B2 more quickly by following our process. If you have a need to create multiple I2B2 instances - to test different data loading approaches or different ontologies - our process will allow you to quickly create a development or a test/quality assurance installation of I2B2.

Keywords: I2B2, Infrastructure

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PS1-41:

Implementing an XML-Based Query Tracking System (whether you want one or not)

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Background/Aims: Systems that lower technical barriers to data access are generally viewed positively. After all, why tie up programmer resources when a simple web-based query system like I2B2 makes complex querying straightforward? Quick and painless summary information is very useful for research. The downside is that easy data access means the potential for abuse increases. Currently, programmers serve as gatekeepers. Programs and meeting notes serve as rudimentary audits of who asks what questions of our data. Easy data access gives the impression that no one is looking at the queries. Group Health Research Institute has created an I2B2 query audit system to serve two functions. First, users know the system is tracking their queries. Second, in the event that sensitive data are disclosed, the audit system may allow stakeholders to determine who was responsible. **Methods:** This presentation will demonstrate a query tracking system that exploits the XML capabilities of I2B2. **Results:** The presentation will cover the technical aspects of XML and associated technologies and provide an overview of web-based technologies including Apache and PHP. We will conclude by raising some interesting questions related to query tracking. For example, if we agree that query tracking is a good idea, we must then consider who has access to the queries. Should we be concerned about someone taking our ideas and getting a jump on a grant application? **Conclusions:** Query tracking is a technical problem that can be solved. This presentation illustrates one approach. However, query tracking raises many questions that must be addressed as we embrace easy access data systems such as I2B2.

Keywords: I2B2, XML

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PS1-07:

Comparing Dental Utilization Among Diabetic & Matched Non-Diabetic Adults in an Insured Population

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Background: About one-third of adults with diabetes have severe oral complications. However, limited previous research has investigated differences in dental care utilization between adults with and without diabetes. **Objectives:** To compare dental care utilization between adults with

and without diabetes using a novel application of hurdle models, a statistical approach that decomposes utilization into components representing the decision to use services, the specific type of services used, and the amount of services used. **Methods/Research Design:** We conducted a retrospective cohort study using data from Washington Dental Service and linked records from Group Health Cooperative on enrollees continuously and dually insured between January 1, 2002 and December 31, 2006. Five years of follow-up dental utilization was compared between adults with and without diabetes. Propensity score matching was used to adjust for differences in baseline covariates between the two groups. **Results:** Post-matching multivariable results show that adults with diabetes had lower odds of visiting a dentist (OR=0.74, $P<0.001$). Among those with a dental visit, patients with diabetes had lower odds of receiving prophylaxes (OR=0.77, $P<0.001$), fillings (OR=0.80, $P<0.001$) and crowns (OR=0.84, $P<0.005$) and higher odds of receiving periodontal maintenance (OR=1.24, $P<0.001$), non surgical periodontal procedures (OR=1.30, $P<0.001$), extractions (OR=1.38, $P<0.001$) and removable prosthetics (OR=1.36, $P<0.001$). **Conclusions:** Our results underscore the need to instill appropriate changes in oral care seeking behavior that will help adults with diabetes receive early intervention, possibly reducing subsequent severe oral disease and costs. We recommend that organizations focused on oral health and diabetes care work jointly to initiate programs that educate patients with diabetes about preventive care and promote periodic dental visits. We also recommend that dental carriers not only increase dental coverage for adults with diabetes but also develop incentive products to promote preventive care seeking behavior.

Keywords: Diabetes, Dental care utilization

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Health Insurance and Economics

C-A5-04:

Quasi-Experimental Evaluation of a Value-Based Health Plan Design Among Healthcare Employees

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Background/Aims: Value-based health insurance products are rapidly gaining popularity and interest among large employers. To date, few data exist to inform policymakers regarding the impact of these plans on health, productivity and costs. The aims of this study are to determine the impact of a novel value-based health plan on employee worksite productivity, health status, healthcare quality, and employee satisfaction at a large employer. **Methods:** This study is a quasi-experimental time-series design with two groups. The intervention group is employees of Group Health Cooperative (GHC) who receive health benefits; the control subjects are employees of Kaiser Permanente Colorado (KPCO). Starting in 2010, the Group Health employees' health plan introduced free and reduced copays for drugs associated with treatment of six chronic diseases, waiver of copay for a fixed number of chronic care visits and devices and increased cost shares for high end imaging. Staff receives a 450 dollar discount on premiums if they complete a health assessment and engage in health behaviors. No changes were experienced at KPCO. Key outcomes will be assessed with a combination of linked survey (for workplace productivity, health status and behavior, satisfaction); claims (for utilization, quality, cost); and human resources (for absenteeism and demographics) data from 5000 randomly selected subjects at each site. Descriptive statistics and GEE regression will be used to characterize differences in outcomes over time between groups. **Results:** Ninety two percent of GHC employees completed the baseline health assessment to qualify for a premium discount. Baseline survey results sent to selected subjects resulted in 73% and 59% response rates from GHC and KPCO respectively. Approximately 62-64 percent agreed to linkage of survey and administrative data. Baseline survey data indicate comparable populations with respect to gender (both 80% female), marital status (both 69% married/partner), education and race (both 79% white) with modest

differences in age (GH older), household income (KPCO higher) distributions, and education (54% KPCO vs. 44% 4 year college graduate). Six percent of both groups self-rated health as fair or poor. Additional results will be provided. **Conclusions:** This evaluation will provide novel health and productivity data associated with value-based designs.

Keywords: Health insurance, Health economics, Worksite health promotion
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C-A5-02:

Is Tailored Screening for Colorectal Cancer based on Gender and Race Cost-Effective?

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¹HealthPartners

Background/Aims: There is increasing discussion regarding screening strategies for colorectal cancer (CRC). Recent evidence suggests guidelines should be individualized by age and race to minimize disease burden and screening costs. The United States Preventive Services Task Force (USPSTF) strongly recommends that clinicians screen men and women 50 years of age or older for colorectal cancer (A recommendation). The USPSTF evidence review found good, direct evidence of the effectiveness of fecal occult blood testing (FOBT); fair, direct evidence for the effectiveness of flexible sigmoidoscopy; and indirect evidence for combined FOBT & flexible sigmoidoscopy, colonoscopy alone, and double contrast barium enema. **Methods:** A 9-state discrete-time Markov micro simulation of the natural progression of colorectal cancer estimated CRC incidence and treatment costs for a US birth cohort. Specific emphasis was given to known differences in incidence and progression among men, women, blacks, and whites. We compared the natural history “base case” of no screening to three alternative strategies: 1) Screening at age 50 with variable screening technologies, 2) 10-year colonoscopy starting at age 50, 3) 10-year colonoscopy with starting age individualized to gender and race. **Results:** The base case scenario had an overall burden of 5,712 cases and 2,027 deaths per 100,000 with the highest burden being among black males (6,118 cases and 2,430 deaths). The current USPSTF recommendation would save 5,082 QALYs/100,000 for a CE ratio of \$22,358 with the largest impact being among black males (7000 QALYs/100,000; CE ratio of \$20,236). Starting at age 50, 10-year colonoscopies would save 6,132 QALYs/100,000 (CE ratio of \$40,912). A tailored strategy which would begin screening black males at age 40, black females at age 45, white males at age 50 and white females at age 55 would save 7,509 QALYs/100,000 (CE ratio of \$15,567). **Conclusions:** Individualized guidelines for CRC screening could contribute to decreasing disparities in disease burden between blacks and whites in a cost effective manner. The acceptability of such guidelines should be explored.

Keywords: Colorectal cancer, Screening strategies, Cost-effectiveness
doi:10.3121/cmr.2011.1020.c-a5-02

PS1-25:

The Impact of HPV Vaccination Upon Optimal Cervical Cancer Screening Strategies

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Background/Aims: The availability of human papillomavirus (HPV) testing and vaccination raises questions regarding the cost-effectiveness of current cervical cancer screening recommendations. The United States Preventive Services Task Force (USPSTF) strongly recommends screening for cervical cancer in women who have been sexually active and have a cervix (A Recommendation). The USPSTF found good evidence from that screening with cervical cytology (Pap smears) reduces incidence of and mortality from cervical cancer. The USPSTF has made no recommendations regarding the use of a human papillomavirus (HPV) vaccine while the Advisory Committee on Immunization Practices (ACIP) recommends routine vaccination of all females aged 11-12. Direct evidence regarding the impact of the HPV vaccine and the optimal strategy for cervical screening is limited. **Methods:**

A 19-state Markov microsimulation was developed to model a US birth cohort from ages 13-85 through the natural progression of cervical cancer. The model analyzed several screening strategies in a vaccinated and an unvaccinated population. Results were expressed as quality-adjusted life years (QALYs), lifetime screening and treatment costs, and incremental cost-effectiveness of different screening and vaccination strategies. The specific strategies considered were: tri-annual screening (current USPSTF recommendation), HPV vaccination only, and vaccination with differing screening increments of 1, 2, 3, 4 and 5 years. The model was further extended to consider potential disparities among ethnic groups. **Results:** Without vaccination, the current USPSTF recommendation of tri-annual screening provides 1,304 more QALYs/10,000 for a cost effectiveness of \$12,375/QALY. A vaccination only strategy would yield an extra 690 QALYs/10,000 for a cost effectiveness of \$14,887/QALY. Coupled with vaccination, screening every 4 years (\$13,362/QALY) is more cost-effective than annual (\$33,616), bi-annual (\$22,062), tri-annual (\$17,994), and five-year (\$15,273) strategies. **Conclusions:** These results indicate that for those who obtain HPV vaccination, recent recommendations for less frequent cervical cancer screening could be re-enforced.

Keywords: Human papillomavirus (HPV) vaccine, Cervical cancer, Screening strategies
doi:10.3121/cmr.2011.1020.ps1-25

PS1-30:

Cost-Effectiveness Analysis of Screening for Kras and Braf Genetic Mutations in Metastatic Colorectal Cancer

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Background/Aims: In the case of metastatic colorectal cancer (mCRC) there is sufficient evidence to show that significantly more effective and expensive anti-Epidermal Growth Factor Receptor (anti-EGFR) monoclonal antibodies like Cetuximab and Panitumumab are effective only if the patient does not have Kras and Braf genetic mutations. Using genetic screening, it is possible to detect these mutations, and avoid unnecessary treatment costs in patients where the use of anti-EGFR antibodies would be ineffective. Current work is based on a decision analysis model which includes anti-EGFR antibodies, anti-VEGF antibodies and chemotherapies as possible lines of treatment. The objective is to complete a cost-effectiveness analysis of screening for Kras and Braf genetic mutations in order to evaluate current and future guidelines on mutation testing. **Methods:** A Monte Carlo Markov model for mCRC is built using eight basic states: surveillance, death, palliative, colon resection, anti-EGFR therapy, anti-VEGF therapy, Oxaliplatin-based therapy and Irinotecan-based therapy. We setup the model with patients having Kras and Braf genetic mutations and synchronous or asynchronous tumors, which can be resectable with variation in progression and response to lines of treatments with a probability equal to the prevalence rates. The model tracks patients on a weekly basis. **Results:** We generated a comprehensive decision analysis model that simulates disease progression, treatment and screening of patients with mCRC. We will present the cost-effectiveness analysis of screening for Kras and Braf in various real world settings based upon results that will be available in March. **Conclusions:** Our decision analysis model's structure and functionality provides an intuitive understanding of the use of screening in the context of mCRC. It provides an objective tool for assessing guidelines regarding the use of genetic screening for mutations in mCRC tumors.

Keywords: Colorectal cancer, Genetic screening, Cost-effectiveness analysis
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PS1-06:

Implications of Diabetes on Dental Costs in an Insured Population

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