The cohort included 27,362 patients. Mean duration of initial therapy was 212 days. Hyperkalemia-associated outcome incidence estimates varied from 33.6 per 1000 p-y (defined as AV, ED or IP visit with $K > 5.5$ or a coded hyperkalemia diagnosis within 7 days) to 11.0 per 1000 p-y (defined as IP or ED visit with $K > 6$ or coded diagnosis within 24 hours). Removing AV had the greatest effect and reducing the timeframe to 24 hours had the least effect on incidence estimates. **Conclusions:** Modifying hyperkalemia definition criteria resulted in up to a 3-fold difference in by estimates of hyperkalemia-associated adverse outcomes. Further work linking these findings to adverse events is critical to decisions regarding appropriate definitions to answer specific study questions. We caution against comparing incidence estimates across published studies without considering the severity implications of differences in hyperkalemia outcomes definitions.

C-C3-03:

From Chart to CART: Improving Automated Case-Finding for Ectopic Pregnancy Using CART Analysis

Onchee Yu, MS, *Group Health, Center for Health Studies*; Jane Grafton, BA, *Group Health, Center for Health Studies*; Victoria L Holt, PhD, *Dept of Epidemiology, University of Washington*; Britton Trabert, PhC, *Dept of Epidemiology, University of Washington*; Linda Wehnes, BA, *Group Health, Center for Health Studies*; Patricia Yarbro, MSW, *Group Health, Center for Health Studies*; Delia Scholes, PhD, *Group Health, Center for Health Studies*

Background/Aims: Research and surveillance work addressing ectopic pregnancy (EP) rely largely on ICD diagnostic codes and CPT procedure codes available from automated data sources. However, cases identified in this way may not be true EP cases, as these codes may also be used to rule out, follow up or note a history of EP. Through the use of additional automated data on treatment, procedures, and other aspects of care, we developed a classification algorithm that could improve the accuracy of EP case identification. **Methods:** Using Group Health automated data files, we initially identified 2,632 potential EP episodes occurring in women aged 15–44 years during 1988–2007 using ICD and CPT codes for EP and for surgical or laparoscopic treatment of EP. Chart reviews to verify EP status were conducted on 130 potential EP cases in the algorithm development dataset and on 150 in the algorithm validation dataset. Using additional information on demographic factors, other diagnosis and procedure codes, treatment modalities, site of care (ambulatory vs. inpatient), and laboratory data available with each EP episode, we conducted a classification and regression tree (CART) analysis to create a case finding algorithm for EP. **Results:** From the CART analysis, the case-finding algorithm for EP contained three main predictors: at least two encounter dates with an EP diagnosis or procedure code during an episode; treatment with methotrexate; and presence of an ICD -9 code of 633.1, 633.10 or 633.11 for tubal pregnancy. Sensitivity for the development and validation sets, respectively, was 95% and 91% while specificity was 78% and 83%. The EP misclassification rate using the new algorithm was 10.7% in the development set and 11.5% in the validation set compared to 32% when EP cases were originally defined using EP diagnosis and procedure codes. **Conclusions:** The CART-derived algorithm for identifying EP cases was highly sensitive, had good specificity, and misclassification rates were notably improved over the original case identification techniques. Additional pharmacy and encounter data available in many health plan databases can markedly improve the accuracy of EP identification. In particular, the identified predictors in the algorithm are available in the CRN VDW, and it would be of interest to test this algorithm at other HMORN sites.

C-C3-04:

Using Electronic Health Record Data to Predict Heart Failure Diagnosis

Nirav R Shah, MD, MPH, *Geisinger Center for Health Research*; Jason Roy, PhD, *Geisinger Center for Health Research*; Walter F Stewart, PhD, *Geisinger Center for Health Research*

Background: Heart Failure (HF) is one of the most common and serious progressive illnesses among elderly patients. It is usually detected at a relatively advanced stage, after irreversible damage has occurred. Early detection offers the potential to substantially reduce patient disability and health care costs. **Objective:** To develop a novel detection strategy, making use of longitudinal electronic health record (EHR) data to create an HF early detection prediction model. **Methods:** All data for this study were obtained from Geisinger Clinic's EHR among patients who had a primary care provider. A prediction model was developed using a nested case control study design, where HF cases diagnosed between 2003–2006 were identified and controls were randomly selected matched on sex, age, and clinic. We used conditional logistic regression to model the relation between EHR data and detection of HF 6+ months and 18+ months before the actual date of diagnosis. Variables for the model included diagnoses, the most recent lab and clinical (e.g., SBP, DBP, pulse pressure) measures, medication orders and ambulatory care use in the previous two years, and smoking status. Data were only used if they occurred in the record either 6+ months or 18+ months before the diagnosis date, depending on the specific model. Model results were validated by combining a bootstrap re-sampling approach with a backwards elimination selection method. **Results:** We identified at least one matching control for 2,239 of the 2,764 cases; 9 or 10 controls were identified for 81% of the cases. A total of 24,249 controls were selected. The model for detecting HF 6+ months before usual diagnosis had an AUC of 0.80; the parallel model for detecting HF 18+ months before usual diagnosis had an AUC of 0.75 (95% CI: 0.73, 0.79). The AUC findings were similar for separate models completed on systolic HF and diastolic HF. **Conclusions:** In practice, clinicians do not have the time or ability to process seemingly disparate data points over a series of visits that might suggest a preclinical HF for a given patient. Our analysis of EHR data indicate that HF can be detected 6 or more months before usual diagnosis with good AUC and high specificity. These findings suggest that routine evaluation of EHR data may be useful in screening for patients at high risk of HF, creating numerous opportunities for early and aggressive intervention and potentially altering the natural history of heart failure for many patients.

PS1-04:

Does Mode Matter? A Comparison of Depression Scores from Mail and Phone

Cheryl Wiese, MA, *Group Health Center for Health Studies*; Paula Sandler, BA, *Group Health Center for Health Studies*; Julie Richards, MPH, *Group Health Center for Health Studies*

Background: Researchers often consider mixing modes for data collection to increase response rate. However, it is possible that people respond differently when asked sensitive questions (like questions about depression) by mail compared to phone. **Methods:** A random sample of 4000 adolescent health plan enrollees (ages 13–17 years) were invited to participate in a brief survey examining exercise, sedentary behaviors, and depressive symptoms. Mailings were directed at parents and included an invitation letter, a consent form, survey, and a $2 pre-incentive for the youth. Parents were instructed to complete the consent form and give the survey to their child to complete and return. Non-responders were sent a second survey. Among remaining non-responders, 60% of the adults were phoned, asking them to review and sign the consent form and to ask their child to complete the screener. Forty percent of remaining non-responders were phoned asking the adults' permission to complete the screener with the child by phone. In a second study, 9,838 adults with a history of diabetes or heart disease were invited to participate in a randomized controlled trial. The initial contact was a mailed 5-item survey that included a depression (PHQ2) screener and eligibility questions, along with a study information sheet and a $2 pre-incentive. Approximately 12 days later, non-responders were sent a second survey, and 10 days later, non-responders were called to complete the screener by phone. **Results:** Data collection is being completed as this abstract is submitted. This poster will examine whether there are differences in depression scores among those who are early responders (complete after one mailing), those who complete after a second mailing, and those who complete by telephone. We will also examine whether there are demographic differences at each step. In addition, we will demonstrate the increases in response rate by adding a phone call to complete a mailed survey. **Conclusions:** This poster will indicate whether this mixing of modes compromises data quality or produces different responses than if only one mode was used.