

POSTER ABSTRACTS

10th Annual HMO Research Network Conference

May 3-5, 2004 Dearborn, MI

Information Technology 47

Effectiveness of Decision Support in an Electronic Medical Record on Prescribing in the Elderly

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Background: While considerable efforts have focused on disseminating evidence-based guidelines, desired changes in physician behavior have not been fully realized. Systems analysis suggests that computerized physician order entry with decision support systems (eg. alerts and reminders) can reduce medication errors. Data support the effectiveness of these methods in reducing medication errors in inpatients; however, there is little research on their effectiveness outpatients. Kaiser Permanente Northwest (KPNW) uses an electronic medical record and medication alerts at clinician order entry. We studied the effect of several of these alerts that targeted prescribing in the elderly.

Methods: The alerts studied targeted diazepam, flurazepam, imipramine, amitriptyline, chlorthalidone, doxepin, and suggested the shorter-acting/ less sedating alternatives of oxazepam, buspirone, paroxetine, temazepam, trazodone, nortriptyline, and desipramine. These drug-specific alerts presented upon prescribing, regardless of patient age. We examined the rate of dispenses for these drugs in KPNW members aged 65+, 1 year before and 1 year after the alerts, using an interrupted time series analysis (ARIMA). The main outcome measure was monthly dispenses for target drugs as a fraction of dispenses for all 13 drugs (targeted plus desired alternative drugs).

Results: Prior to the alerts, the raw rate of dispenses for target drugs was 31% for those 65+ and 21% for those 75+: these rates fell to 25% and 18% after the alerts. Applying the ARIMA modeling showed an absolute percentage drop of 4.6% ($p < 0.01$) for those 65+ and 3.5% ($p < 0.05$) for those 75+, representing a 15-16% relative reduction from baseline. The slope coefficients were also significant (and negative) in the time-series model, suggesting that not only was the interruption (immediate level change) significant, but that the continued downward trend was steeper than before the intervention.

Conclusion: In the outpatient setting, alerts at the time of clinician medication order entry can increase the appropriateness of drug therapy and thus may enhance the safe use of medications, however, some level of potentially inappropriate prescribing remains. Important next steps involve work to assess the generalizability of these findings to other safety issues, and methods to increase clinician acceptance, including studying alerts that are more patient specific.