Analysis of Family Medicine Hospital Discharge and Follow-up Office Visit Medication List Discrepancies

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Objective

The specific learning objectives of the project include:
• Chart audit the hospital DC and outpatient clinic Transition of Care (TOC) medication lists for patients on the inpatient teaching service who were discharged during a 12-month period from June 2016 to May 2017.
• Quantify the type and number of medication discrepancies noted after systematic comparison of the patient’s DC and TOC medication lists
• Identify the root causes of the more common DC/TOC medication discrepancies;
• Determine if any factors correlate with the types of errors identified;
• Compare the cause of and types of errors to those noted in past research; and
• Suggest process changes that seek to improve medication safety from time of hospital discharge to post-discharge TOC office visit

Outcomes / Results

Sample Characteristics

The final analytic sample was comprised of 171 discrete hospital DC encounters that the project team could link to a subsequent TOC office visit for the same patient. The majority of sample patients were female (n=118, 69%). The mean age of patients was 61.48 years (SD 18.09 years) and ranged from 23 to 87 years. Patients’ hospital length of stay (LOS) averaged 2.99 days (SD 2.88, range 1 to 19) and they possessed a mean of 4.98 chronic health conditions (SD 3.99, range 0 to 28). The number of medications on the project patients’ hospital DC medication lists (mean 7.17, SD 4.95, range 0 to 24) and TOC medication lists (mean 7.46, SD 4.99, range 0 to 24) both ranged considerably. However, the number of medication discrepancies between the DC and TOC medication lists averaged a lower 1.46 (SD 1.93 indicating a highly variable spread) but still ranged from 0 to 10.

Regression Analyses

A series of Pearson product-moment bivariate correlation procedures were completed first between the medication discrepancy categories (three equivalent-sized tertile groups) and other selected study factors. Several pertinent statistically significant bivariate correlations were found:
• Age category and LOS (Pearson r = 0.178, n = 169, p = 0.02)
• Age category and number of chronic conditions (Pearson r = 0.246, n = 169, p = 0.002)
• Age category and number of DC medications (Pearson r = 0.1321, n = 169, p = 0.001)
• Age category and number of TOC medications (Pearson r = 0.326, n = 169, p = 0.001)
• Patient gender was non-significant for any related study factors

None of the study factors came up as statistically significant predictors of DC to TOC medication discrepancy category.

Discussion

A sample of 171 charts were reviewed and represented discrete DC to TOC pairings. Of 171 total charts reviewed, 62 (37%) had no recorded medication discrepancies. Of the 109 (63%) that were noted to have medication discrepancies, 32% had one discrepancy, 52% had two to five discrepancies, 15% had 6-10 discrepancies, and <1% had ten or greater discrepancies. Figure 2 demonstrates additional detail on the types of medications seen in the discrepancies noted. Chronically prescribed medications (CP) represented the largest proportion of categories of medication discrepancies. It should be noted that over-the-counter (OTC) medications represented a surprisingly large percentage of medication discrepancies.

In the end, the data suggested only that one statistically significant variable, the number of chronic health conditions, influenced degrees of DC to TOC medication list concordance. The lack of significant associations between DC and TOC medication list concordance and other patient factors could possibly be attributed to: a) a lack of a sufficient-sized patient sample, b) a lack of diversity in the patient population, and c) perhaps the lack of any possible association to detect in the first place. Ideally, data from a larger, more diverse sample of discharged Family Medicine hospital patients spanning a wider time course can be used in future studies for predictive models to examine this complex aspect of contemporary primary care practice.

Conclusions and Implications

• The number of chronic health conditions was identified as significantly impacting the concordance of a patients’ DC-TOC medication list when observed between transitions of care levels
• Further studies may be warranted to identify which chronic conditions and medication classes provide the most opportunity for discordant medications to occur
• Physicians and their support staff must remain vigilant in their documentation of ALL of a patient’s medications including over-the-counter, herbal preparations and other supplements, and prescription medications at every patient encounter to reduce medical list discordance

Educational Design/Methods

After IRB approval, the study team collected project data using the electronic health record files concerning a sample of 171 discrete hospital admission encounters between June 2016 and May 2017. Sample analyses primarily examined the clinical characteristics of Family Medicine patients on the inpatient teaching service as well as potential predictive factors contributing to the level of congruency between the patients’ DC and TOC medication lists. The potential significance of several additional factors (i.e. age, gender, length of hospital stay, number of chronic health conditions) on the medication lists congruency was also evaluated. The MSU SCS study analyst first converted all string response data into numerical form. The encounter-related subgroup data was further collapsed into equivalent-sized categories for analyses. The project’s overall null hypothesis was that there would be no statistically significant main effect differences identified from any selected predictive factors on overall category of DC to TOC medication list concordance.

Data Collection/Analysis

Following cleaning of the largely complete study data, the SCS study analyst examined the validity of the project team’s primary hypothesized relationships using SPSS Version 24 software. Using IBMREF, the analyst generated a series of descriptive statistics concerning the sample characteristics. The potential two-tailed predictive significance of the selected study factors on DC to TOC medication list discordance was modeled during a series of non-parametric, forward stepwise multinomial logistic regression procedures. For these analyses, the analyst observed a coefficient Alpha p-value of 0.05 to indicate statistical significance.