Prescribing Patterns of Cost-Effective Drugs

Evaluating the costs of prescription drug expenditures can help organizations determine whether health IT, in particular, electronic prescribing and computerized provider order entry (CPOE) with clinical decision support, impact the use of cost-effective medications.

Measure Category: Financial Impact

Quality Domain: Efficiency

Current Findings in the Literature: Americans filled an average of 11.5 drug prescriptions per person in 2007 for a total of $202 billion in medication expenditures.[1] As prescription drug costs continue to increase,[2] medications are a focus of cost-containment measures. Although brand medications are commonly prescribed, published evidence-based guidelines often support the use of less expensive alternatives. Health IT, such as clinical decision support systems (CDSS) that provide evidence-based information about the efficacy, safety, and cost of medications to providers at the time of prescribing, can motivate people to choose less expensive drug alternatives. A simple prompt displaying cost information on the ordered medication and cheaper available alternatives may be enough to have a clinician choose a cheaper, yet equally effective, substitute.

In a study examining the impact of using CDSS during e-prescribing, researchers found that providers who received evidence-based messages had significantly lower prescription costs than those in the control group. The average cost per new prescription was $4.16 lower (p= .02) in the intervention group, and the average cost for new and refilled prescriptions was $4.99 lower (p=.01). Further, the 6-month savings from new prescriptions and their refills were estimated to be $3,450 (95% confidence interval (CI), $1,030-$5,863) per provider.[3]

In a followup paper, the researchers found that providers using e-prescribing continued to have lower prescription costs than those who did not over 12 months.[4] Providers using e-prescribing had average costs for new prescriptions that were $4.12 lower (95% CI, $1.53-$6.71; p=0.003) than new prescriptions written by control providers.

Source of Data for the Measure: Pharmacy claims or billing data.

Methodology for Measurement

Study Design 1: Pre- and post-health IT implementation

Study Period 1: Define baseline and intervention time periods (e.g., number of months).

Evaluation 1: Change in medication expenditures pre- to post-health IT implementation.

Study Design 2: Depending on the type of health IT, evaluators may be able to randomize physicians to an intervention (those using health IT) or control (those not using health IT) group for comparison; if health IT is being implemented at more than one site, they could also randomize sites to an intervention or control group for comparison.

Study Period 2: Define study time period (e.g., number of months).

Evaluation 2: Comparison of control and intervention medication expenditures.

Analysis Considerations

Several issues should be addressed before proceeding with an analysis plan:

1. Your data collection and analysis plan should be based on sound methodology. In order to achieve valid, robust results, you should consider planning your analysis with the input of a trained statistician to determine sample size and appropriate statistical techniques. It is not uncommon to begin analyzing data, only to find the original statistical plan was flawed, leaving you with data that is inadequate for analysis.
2. You may want to only examine a particular category of drugs. If you want to look at all drug expenditures, you may need to adjust for drug categories to account for possible confounding, since different categories of drugs may differ significantly in cost. For example, antidepressants are typically more expensive than non-opioid analgesics (e.g., acetaminophen, aspirin).[5,6]
3. Similarly, you may want to consider only those prescriptions that were ordered using the health IT implementation. Verbal orders would not be affected by CDSS applications and their inclusion in the analysis would therefore reduce the impact. This includes taking into account classes of drugs where e-prescribing may not be an option, for example, narcotics.
4. You may need to consider which insurance formularies have been reliably integrated into your system. If all formularies from all available insurance carriers have not been integrated, a provider may end up prescribing a higher cost drug from the perspective of the insurer, inadvertently reducing the impact of the application.

Relative Cost: Low: if claims or pharmacy data are readily available.

Potential Risks: Cost data is often very difficult to analyze properly and may need expert analysis for proper interpretation.

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