



Outcomes Assessment

Gastrointestinal Medications

Prepared for Kansas Medical Assistance Program in July, 2009

EXECUTIVE SUMMARY

Purpose of Intervention	To promote safe, cost-effective use of anti-secretory agents in the management of gastrointestinal disorders, including peptic ulcer disease (PUD) and gastroesophageal reflux disease (GERD).
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Intervention	Intervention Type	Population-based mailing
	Intervention Mailing Date	March 2008
	Pre-intervention Period (Baseline)	September 2007 – February 2008
	Post-intervention Period (Post)	April 2008 – September 2008
	Number of Letters Mailed	788
	Number of Targeted Physicians	788
	Number of Targeted Patients	2,416
	Adjusted Targeted Patients	1,465

Changes in Clinical Indicators

Clinical Indicators	Target		
	Baseline	Sep-08	% Change
Increased Risk of ADE	992	757	-23.7%
Drug-Drug Interaction	52	14	-73.1%
Duration of Therapy	475	270	-43.2%
Total	1,519	1,041	-31.5%

Savings Calculation

Intervention-Related Drug Savings	
Target Group: Actual Average Paid Amount Per Patient Per Month (Baseline)	\$145.43
Target Group: Actual Average Paid Amount Per Patient Per Month (Post)	\$135.09
% Change in Target Group from Baseline to Post	-7.12%
Estimated Savings Per Patient Per Month	\$10.35
Total Number of Target Patients	1,465
6-Month Total Savings	\$90,966.75

Intervention-Related Medical Savings	
Target Group: Actual Average Paid Amount Per Patient Per Month (Baseline)	\$24.18
Target Group: Actual Average Paid Amount Per Patient Per Month (Post)	\$12.40
% Change in Target Group from Baseline to Post	-48.72%
Estimated Savings Per Patient Per Month	\$11.78
Total Number of Target Patients	1,465
6-Month Total Savings	\$103,571.38



BACKGROUND

The purpose of this initiative is to promote safe, cost-effective use of anti-secretory agents in the management of gastrointestinal (GI) disorders. Included in this initiative are both quality and economic measures. The intervention materials encourage (1) reevaluation of GI medication use and discontinuing unnecessary or ineffective anti-secretory drug regimens in patients with unknown GI conditions, and in patients with PUD (2) identification of potentially unnecessary duplicate anti-secretory therapy, (3) reducing patient risks for NSAID-induced ulcer disease, (4) recognizing and avoiding potential drug-drug interactions involving anti-secretory medications, and (5) recognizing and avoiding drugs potentially aggravating GERD.

Gastrointestinal agents account for a significant portion of the drug budget for most payors. These agents are used to treat a variety of known GI disorders, and are also frequently used as empiric therapy when symptoms are vague or when exact diagnosis is unclear. Coordination of care may play a role in unintentional continuation of therapy with GI medications, particularly when patients are transitioning between different care settings (e.g. discharge from hospital to outpatient clinic setting).

Dyspepsia is a common symptom complex including descriptors such as upper abdominal discomfort, early satiety, postprandial fullness, bloating, distension, nausea, or vomiting.¹ The prevalence of dyspepsia is estimated to range between 25% and 40% in the U.S., and may be responsible for up to 4%-5% of all primary care physician visits.² Common organic GI diseases causing symptoms of dyspepsia include GERD, PUD and, rarely, gastric malignancies. Functional, or non-ulcer, dyspepsia is usually a diagnosis of exclusion.

METHODOLOGY

Changes in intervention-related pharmacy dollars paid, pharmacy dollars paid per patient per month (PPPM), and number of pharmacy claims were examined. This intervention identified providers whose patients were affected by drug-drug interactions, increased risk of ADE, and long duration of therapy. To assess the impact of the intervention, pharmacy drug claims were reviewed from April 2008 through September 2008.

Clinical Criteria: Criteria, rationale, and text message(s) to providers are listed below. All physicians with recipients “hitting” on criteria received letters.

- Drug-Drug Interactions

This indicator identifies patients with drug-drug interactions classified as moderate to severe in a 45-day period of time.

Rationale: Patients with potential drug-drug interactions are at increased risk of having an adverse drug event. There may be coordination of care issues if more than one prescriber is involved.

Sample Provider Paragraph:

It appears that your patient has received a cephalosporin and acid-reducing agent concurrently. Acid-reducing agents can decrease the effect of some cephalosporins (i.e., cefuroxime, cefpodoxime) by increasing gastric pH, which may lead to decreased absorption of the cephalosporin. Since the cephalosporin was only given concomitantly with the acid-reducing agent for a limited time, this may not currently be an issue. However, you may wish to consider an alternative to cefuroxime or cefpodoxime in the future should the condition being treated arise again. If this combination is used in the future, diminished antibiotic effect should be monitored.

- Increased Risk of Adverse Drug Events

The increased risk of adverse drug event indicator identifies patients receiving medications who are at risk of experiencing an adverse drug event due to predisposing medical conditions. Additionally, certain concomitant medication therapy may result in additive effects resulting in adverse events.

Rationale: Medication related adverse events are common in primary care, and many are preventable or ameliorable. Improvements in monitoring for and responding to symptoms are especially important for the prevention of adverse drug events in outpatients.

Sample Provider Paragraph:

Based on drug claims and submitted ICD-9 codes, it appears that your patient has gastroesophageal reflux disease (GERD) and is receiving an anticholinergic agent. This drug should be used with caution in patients with GERD, since it may reduce lower esophageal sphincter tone, delay gastric emptying, and worsen symptoms. Please review the need for this medication, consider the use of appropriate alternatives, or regularly monitor for signs and symptoms of GERD (e.g., heartburn, regurgitation).

- Duration of Therapy

The long duration of therapy indicator identifies patients receiving therapy beyond the recommended duration.

Rationale: When the duration of therapy exceeds the recommended duration, the risk of experiencing an adverse drug event and prescription costs increase.



Sample Provider Paragraph:

It appears that your patient has taken a histamine-2 receptor antagonist (H2RA) for longer than 12 weeks without a submitted GI diagnosis such as gastroesophageal reflux disease (GERD) or a recent diagnosis of peptic ulcer disease (PUD). Please re-evaluate the need for this therapy and discontinue this drug if it is no longer necessary.

Definitions:

Adjusted Target Patients – All patients of physicians who were included in the intervention, who had pharmacy claims and were active plan members throughout the post-intervention time period. Additionally, when outcomes are performed, these patients' pre-intervention (baseline) hits are re-evaluated to make certain that the status of clinical indicators haven't changed for each patient due to late pharmacy and medical claims.

Intervention-Related Pharmacy – Cefpodoxime, anti-ulcer medications, cefuroxime, phenytoin, carbamazepine, beta blockers, calcium channel blockers, procainamide, quinidine, tacrine, non-combination TCA's, warfarin, dofetilide, meperidine, metformin, moricizine, anti-fungal azoles, metoclopramide, oral cyclosporine, benzodiazepines, nonselective NSAIDs, oral steroids, phentolamine, phenoxybenzamine, anticholinergics, systemic beta2 agonists, ACE Inhibitor/CCB combinations, amlodipine/atorvastatin, oral contraceptives, morphine products, oral theophylline, COX-2 Selective, misoprostol, NSAID/misoprostol.

RESULTS

Characteristics

Table 1 describes the patient populations for the target group included in the population-based intervention based upon mean age, gender, number of providers, average number of prescriptions per patient per month, and total drug utilization. As can be seen from the table, the target group had a mean age of 48.3 years, was mostly female, saw 3.9 providers, and utilized 8.3 prescriptions per month in the baseline period.

Table 1: Patient Characteristics

	Target (N=1,465)
Mean Age	48.3
Percentage Male	33.0%
Percentage Female	67.0%
Number of Providers	3.9
Average Number of Prescriptions PPPM*	8.3
Intervention-Related Drug Utilization**	
Average Number of Drugs***	3.6
Average Number of Claims	15.4
Average Days Supply	415.8
Average Amount Paid	\$864.05

* Number of prescriptions per patient per month (PPPM) is the average for the 6 month baseline period

** Based on 6 months of baseline claims data

*** A distinct drug is defined by using a coding system similar to the Hierarchical Ingredient Code List (HICL) in that distinct drugs are identified at the ingredient level.

Drug-Drug Interaction

Table 2 displays the changes in target patients who were flagged for a DDI. Overall, this indicator decreased by 73.1% in the target group.

Table 2: Changes in Drug-Drug Interaction

Drug-Drug Interaction	Target		
	Baseline	Sep-08	% Change
Cefuroxime-Acid Reducing Agents	1	1	0.0%
Cimetidine-Calcium Channel Blocker	1	1	0.0%
Cimetidine-TCA	1	1	0.0%
Omeprazole-Benzodiazpines	41	9	-78.0%
Omeprazole-Phenytoin	8	2	-75.0%
Total	52	14	-73.1%

Increased Risk of ADE

The changes in the number of patients flagged for being at an increased risk of adverse drug events are displayed in Table 3. Overall, there was a 23.7% reduction in the number of target patients.

Table 3: Changes in Increased Risk of ADE

Increased Risk of ADE	Target		% Change
	Baseline	Sep-08	
GERD & Anticholinergic Agents	551	428	-22.3%
GERD & Calcium Channel Blockers	235	183	-22.1%
GERD & Diazepam	134	102	-23.9%
GERD & Narcotics	17	10	-41.2%
GERD & Oral Beta-2 Agonists	4	3	-25.0%
GERD & Oral Contraceptives	19	9	-52.6%
GERD & Theophylline	15	13	-13.3%
NSAID and H2RA use	15	9	-40.0%
NSAID and H2RA use, multiple MD, h/o PUD	1	0	-100.0%
NSAID and PPI use, multiple MD, h/o PUD	1	0	-100.0%
Total	992	757	-23.7%

Duration of Therapy

The changes in the number of patients flagged for long duration of therapy are displayed in Table 4. Overall, there was a 43.2% reduction in the number of target patients.

Table 4: Changes in Duration of Therapy

Duration of Therapy	Target		% Change
	Baseline	Sep-08	
Long Duration: H2RA / Dx Unknown	126	82	-34.9%
Long Duration: PPI / Dx Unknown	332	175	-47.3%
PUD with continued PPI	17	13	-23.5%
Total	475	270	-43.2%

BUSINESS ANALYSIS

The overall savings for the intervention are calculated in Tables 5 and 6. Per patient per month (PPPM) drug amount paid for intervention-related drugs and intervention-related medical costs were separately calculated for the target group for the six-month baseline and six-month post-intervention periods. First, the PMPM savings was calculated by finding the difference between the baseline and post-period PPPM paid amount. Then, the PPPM savings was multiplied by the number of intervention months and number of targeted patients.

Table 5 shows the intervention-related drug amount paid for target patients decreased \$10.35 PPPM in the post-intervention period. This yielded an overall estimated savings of \$90,967 in intervention-related drug expenditures during the six-month post-intervention period.

Table 5: Intervention-Related Pharmacy Savings

Savings Calculation:	
Target Group: Actual Average Paid Amount Per Patient Per Month (Baseline)	\$145.43
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% Change in Target Group from Baseline to Post	-7.12%
Estimated Savings Per Patient Per Month	\$10.35
Total Number of Target Patients	1,465
6-Month Total Savings	\$90,966.75

Table 6 shows the intervention-related medical amount paid for target patients decreased \$11.78 PPPM in the post-intervention period. This yielded an overall estimated savings of \$103,571 in intervention-related medical expenditures during the six-month post-intervention period.

Table 6: Intervention-Related Medical Savings

Savings Calculation:	
Target Group: Actual Average Paid Amount Per Patient Per Month (Baseline)	\$24.18
Target Group: Actual Average Paid Amount Per Patient Per Month (Post)	\$12.40
% Change in Target Group from Baseline to Post	-48.72%
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Total Number of Target Patients	1,465
6-Month Total Savings	\$103,571.38

LIMITATIONS

A control group was not utilized for this intervention. This limited the comparisons that could be performed in the analysis. Therefore, instead of being able to compare an intervention group with a non-intervention group, the analysis is essentially limited to changes in the intervention group before and after intervention.

The time frame of 6 months may not capture the full extent of the impact of the intervention. Providers may be required some time before they can change their patient's drug regimens.

CONCLUSIONS

This intervention focused on improving prescribing practices and reducing the overall cost of care. Overall, the intervention was successful in reducing the total number of clinical indicators for target patients by 31.5%.

In terms of financial outcomes, the amount paid for intervention-related drugs decreased \$10.35 PPM in the post-intervention period. This yielded an overall estimated savings of \$90,967 in intervention-related drug expenditures during the six-month post-intervention period. Additionally, the amount paid for intervention-related medical decreased \$11.78 PPM in the post-intervention period, yielding an estimated \$103,571 savings during the post-intervention period. Therefore, the total estimated savings for this intervention is \$194,538.