Prospective Analysis of a Pharmacist Driven Intervention to Optimize Alvimopan Use in a Large Community Hospital

Harleen Gill, PharmD; Joseph Cavanaugh, PharmD, BCPS, BCCCP; Jessica Hill, PharmD, BCPS, BCACP

Community Medical Center, Toms River, NJ

RWJBarnabas HEALTH

BACKGROUND

Alvimopan is a peripherally acting μ-opioid antagonist indicated for the prevention of post-operative ileus. It is administered as a 12 mg capsule once anywhere between 30 minutes to 5 hours prior to surgery, followed by 12 mg twice daily beginning the day after surgery for a maximum of 7 days.[1] Postoperative ileus is the cessation of coordinated bowel motility, and it can delay gastrointestinal recovery and hospital discharge until resolution.[2] Postoperative ileus is characterized by abdominal distention, bloating, nausea, vomiting, pain, accumulation of gas and fluids in the bowel, delayed passage of flatus and defecation.[2] The resolution of postoperative ileus is defined as both upper and lower gastrointestinal recovery, which is characterized by the toleration of solid food and first bowel movement or flatus.[3] Alvimopan can accelerate the recovery of gastrointestinal function and it has been shown to significantly reduce hospital length of stay and postoperative ileus-related morbidity.[4,5] Once a patient has a bowel movement or flatus and is able to tolerate solids, ileus is no longer a concern so additional doses of alvimopan are not necessary.[2,3] Therefore, an opportunity exists to reduce the unnecessary usage of alvimopan and reduce overall adverse drug reactions, side effects, and expenditures.

PURPOSE

The purpose of this study is to improve clinical appropriateness of alvimopan by reducing unnecessary usage and limiting drug exposure in patients who had abdominal surgery.

OBJECTIVES

The primary objective is to measure the impact of a pharmacy surveillance tool on the appropriate usage of alvimopan.

- Appropriate usage= alvimopan discontinuation after first bowel movement with an active diet order

Secondary Objective	Definition
Length of therapy (LOT)	• Total number of days therapy received post-operatively • Total number of doses received
Length of stay (LOS)	• Total number of days hospitalized • Total number of days hospitalized post-operatively
Total opioid usage	• Total duration of opioids during alvimopan therapy • Total daily usage of opioids per day in IV morphine equivalents
Cost analysis	• Cost burden= number of inappropriate doses per patient x cost per dose • Total cost= number of doses per patient x cost per dose

The authors have no conflicts of interest to declare

METHODS

This is a single center, prospective cohort study of patients treated with alvimopan for the prevention of post-operative ileus. This study was approved by the Institutional Review Board (IRB). Retrospective data collected from March 2018 to March 2019 and prospective data collected from November 2019 to March 2020.

All patients ≥ 18 years old initiated on alvimopan therapy post-operatively were evaluated

↓

Patient demographics, medication history, diet orders, bowel function and treatment outcomes were obtained from the electronic medical record

↓

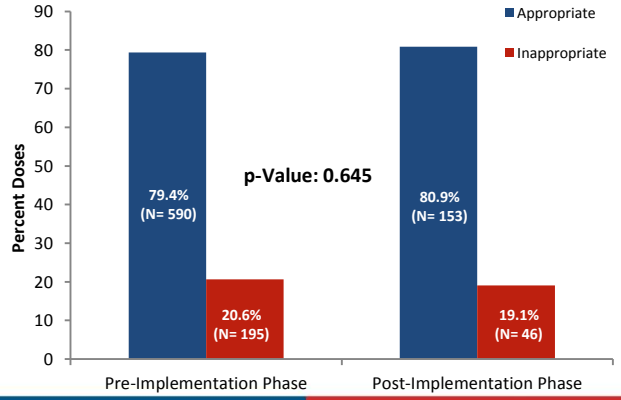
Recovery of gastrointestinal function was evaluated and when appropriate, discontinuation of therapy was recommended to provider

RESULTS

Table 1: Baseline Characteristics

Baseline Characteristics	Sample size	Age (years) ± SD	Concomitant metoclopramide
Pre-Implementation	103	70.1 ± 12.7	71 (68.9%)
Post-Implementation	40	68.7 ± 12.6	36 (90%)

Figure 1: Primary Outcome- appropriateness of alvimopan usage



RESULTS

Table 2: Secondary Outcomes

Mean ± SD (Unless indicated)	Pre-Implementation Phase	Post-Implementation Phase	p-Value
Length of therapy			
Total post-op (days)	4.03 ± 1.64	3.18 ± 1.26	**0.001**
Total (doses)	7.21 ± 3.02	6.03 ± 2.41	**0.016**
Length of stay	Median (IQR)	Median (IQR)	
Total hospitalized (days)	4 (3,10)	4 (3,7.25)	0.252
Total post-op (days)	4 (3,6)	3.5 (3,5)	0.156
Total opioid usage			
Total opioid (days)	3.35 ± 1.99	2.97 ± 1.51	0.251
Total dose per day (MME)	12.1 (8,16.9)	15.7 (10.5,20.4)	0.099

Table 3: Cost analysis

Cost Burden	Pre-Implementation Phase	Post-Implementation Phase	p-Value
Inappropriate doses	$245.23 ± $325.18	$189.85 ± $226.02	0.689
Total doses	$1,190.89 ± $498.31	$994.68 ± $398.27	**0.041**

CONCLUSION

Pharmacist intervention resulted in a reduction in length of therapy post-operatively and total number of alvimopan doses. The total cost associated with alvimopan use per patient also significantly decreased. Limitations of this study include sample size, provider access, and the COVID-19 pandemic leading to a disruption in surgeries. Future direction includes a system wide implementation of a 5-day automatic stop order policy for all alvimopan orders.

REFERENCES

1. Kraft M, Maclaren R, Du W, Owens G. Alvimopan (Entereg) for the management of postoperative ileus in patients undergoing bowel resection. P T. 2010;35(1):44–49.
2. Wolff BG, Michelassi F, Gerkin TM, et al. Alvimopan, a novel, peripherally acting mu opioid antagonist: results of a multicenter, randomized, double-blind, placebo-controlled, phase III trial of major abdominal surgery and postoperative ileus. Ann Surg 2004; 240:728.
3. Vaughan-Shaw PG, Fecher IC, Harris S, Knight JS. A meta-analysis of the effectiveness of the opioid receptor antagonist alvimopan in reducing hospital length of stay and time to GI recovery in patients enrolled in a standardized accelerated recovery program after abdominal surgery. Dis Colon Rectum. 2012; 55(5):611-20.
4. Poston S, Broder MS, Gibbons MM, et al. Impact of alvimopan (Entereg) on hospital costs after bowel resection: results from a large inpatient database. P T. 2011;36(4):209–220.
5. Bell TJ, Poston SA, Kraft MD, et al. Economic analysis of alvimopan in North American Phase III efficacy trials. Am J Health Syst Pharm. 2009; 66(15):1362-8.
6. Entereg (alvimopan) [prescribing information]. Whitehouse, Station, NJ: Merck Sharp & Dohme Corp; August 2015.