

# Reasons for Phosphate Binder Discontinuation Vary by Binder Type

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#### Introduction

Among dialysis patients, bone and mineral metabolism disregulation is a serious and pervasive problem, yet drug nonadherence is high. 1,2 Markers of mineral and bone disorders (MBD), including hyperphosphatemia, hyperparathyroidism, and hypercalcemia, have been associated with increased risk of mortality and hospitalization,<sup>3-8</sup> yet only a small percentage of patients have been shown to meet all 4 KDOQI-recommended MBD targets.9

Nonadherence with phosphate binders is common in end-stage renal disease (ESRD) patients which contributes to elevated phosphorus levels. Pill burden, side effects, complex regimens, and cost all contribute to the nonadherence observed. With recent reports of phosphate binder nonadherence at 62% in ESRD patients,8 there is an unmet need for new phosphate binders that can overcome these barriers to adherence.

## Objectives

- We classified and quantified the reasons for branded phosphate binder discontinuation.
- We tested for differences between phosphate binders in the percent of patients who discontinue use for each reason.

# Methods

- We conducted a retrospective analysis using a database from a large dialysis organization.
- Adult Medicare patients (≥ 18 years of age) receiving in-center hemodialysis (HD) at a large dialysis organization were included.
- Patients receiving peritoneal dialysis, home HD, and nocturnal HD were excluded.
- Phosphate binder prescriptions and reason for discontinuation were analyzed from electronic medical records.
- Two independent coders classified each reason for discontinuation (July 1, 2009 through June 30, 2011) into 5 categories which were subsequently divided into 28 subcategories. Any discrepancies were resolved by a third coder.
- The percent of patients on each phosphate binder was calculated within each category.
- Based on a pilot test of one third of the data, 5 primary categories were established.
- I. Discontinued, No Reason Given
- 2. Lab Results
- 3. Patients Not Tolerating
- 4. Expense, Insurance
- 5. Other Patient Circumstances

#### Results

Table 1. Reasons for Discontinuation

Category	Count	Count Percentage	
Discontinued, No Reason Cited	15,489	50.1%	
Lab Results	8,469	27.4%	
Patient Not Tolerating	3,339	10.8%	
Expense, Insurance	2,498	8.1%	
Other Patient Circumstance	1,138	3.7%	
Total	30,933	100%	

- 30,933 reasons were classified for this study; approximately half of the records (50.1%) provided no specific reason for discontinuation (Table 1).
- The second and third largest categories of reasons cited for discontinuation were "Lab Results" (27.4%) and "Patient Not Tolerating" (10.8%) (Table 1).
- Within "Lab Results" the top 3 categories were the following:
  - Hypophosphatemia (41.7%)
  - Hypercalcemia (24.4%)
  - Not Needed (16.7%)
- The distribution of binder utilization by binder type in the total sample analyzed (Total Sample in Figure 1) was representative of the actual binder distribution in the large dialysis organization's patient population.
- The distribution of patients not tolerating by phosphate binder was not equivalent to the distribution of phosphate binder use within the total sample (Figure 1).
- Specifically, while patients on lanthanum carbonate accounted for 14% of the total sample, they comprised 40% of the "Patient Not Tolerating" category and were similarly over-represented in 4 of the 5 subcategories compared to the distribution in the total sample.
- Within the "Patient Not Tolerating" subcategory, "Gl Upset" was the most common reason (Table 2).

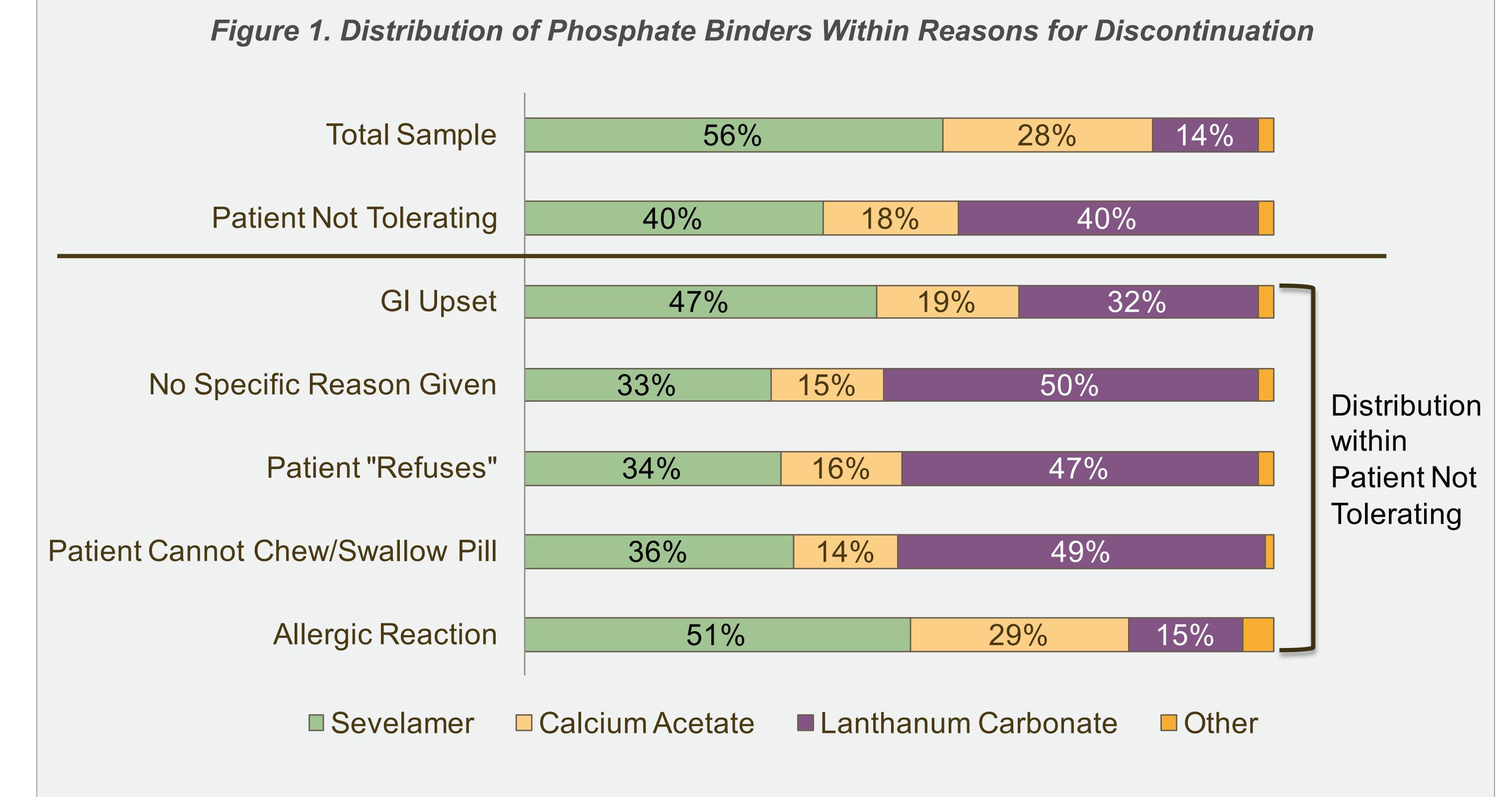


Table 2. Distribution of Phosphate Binders Within Patients Not Tolerating as a Reason for Discontinuation

	Count	Within Category Percentage	Sevelamer	Calcium Acetate	Lanthanum Carbonate	Other
Patient Not Tolerating	3,339	100%	1,343	584	1,345	67
GI Upset	1,596	47.8%	743	307	514	32
No Specific Reason Given	960	28.8%	315	146	478	21
Patient "Refuses"	462	13.8%	159	76	219	8
Patient Cannot Chew/Swallow Pill	253	7.6%	91	35	124	3
Allergic Reaction	68	2.0%	35	20	10	3

#### Conclusions

- Our analysis suggest that the true overall percentage of patients with difficulty tolerating pills is under-reported and under-estimated given the large percentage of discontinuation records without a reason.
- A disproportionate percent of patients receiving lanthanum carbonate discontinued due to patient-reported side effects.
- Further work is needed to identify the relative tolerability of phosphate binders and potential explanations for intolerability and discontinuation, such as prescription bias.
- Reasons for phosphate binder intolerability under real life conditions may be useful to understanding the key strengths and weaknesses of a phosphate binder since HD patients are known to have considerable daily pill burden and poor compliance.<sup>2,10</sup>
- Similarity between the study sample composition and the larger DaVita patient population may support the study's external validity and comparison of the study results to the broader US HD patient population. However, the study conclusions are limited by the high number of unspecified reasons for discontinuation.

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