

# Phosphate containing prescription medications contribute to the daily phosphate load in a third of hemodialysis patients.



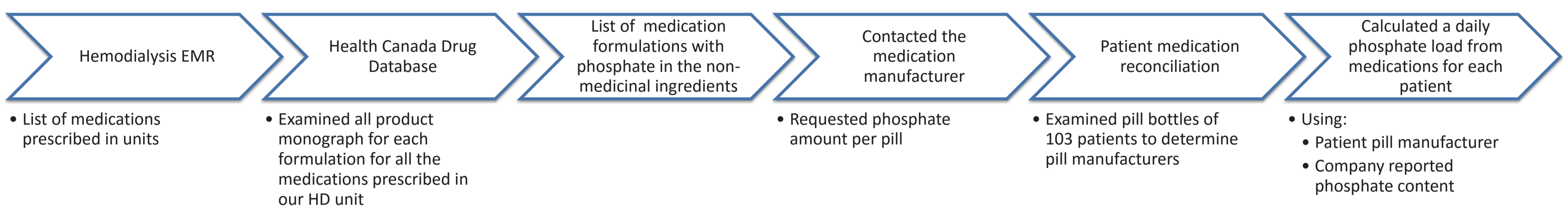
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## Introduction

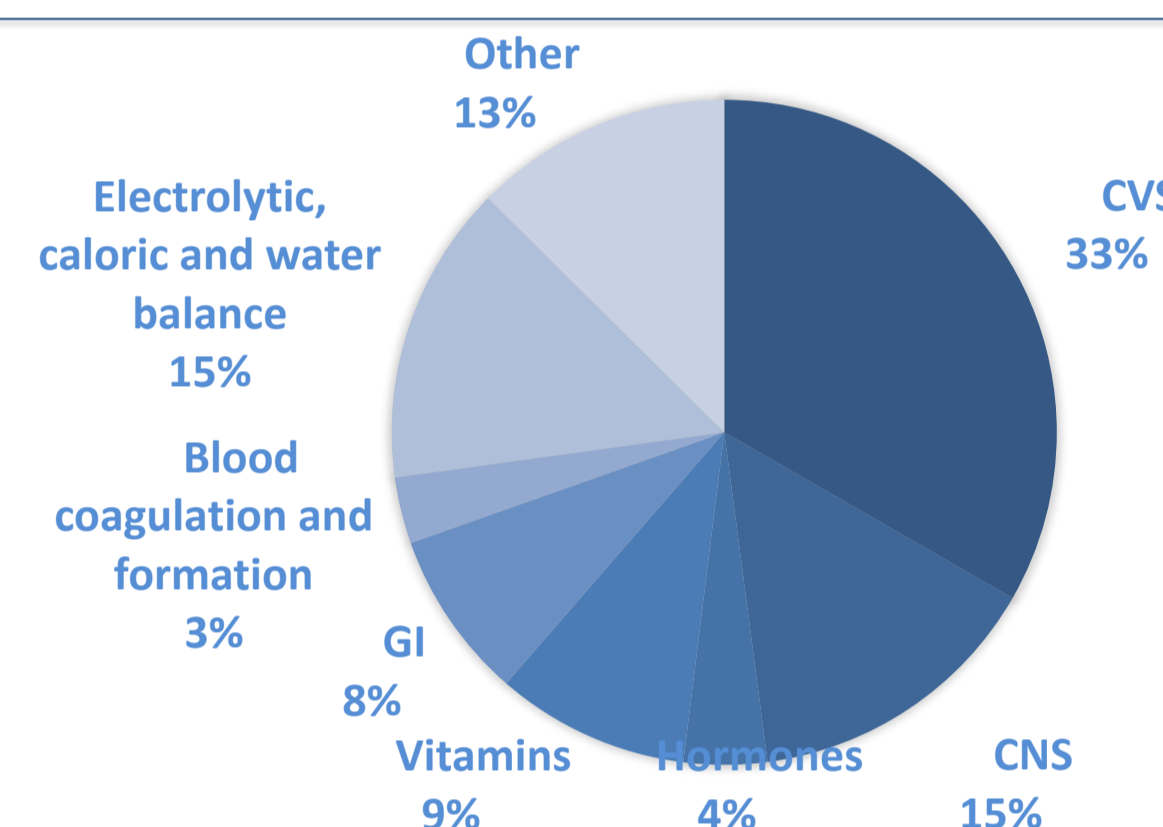
Cardiovascular disease in dialysis patients is associated with hyperphosphatemia, which is primarily managed by restriction of dietary phosphate intake to 800-1000 mg/day and phosphate binders. Medications can use phosphate salts as excipients in tablets to disperse the active ingredient. The contribution of prescribed medications to the daily oral phosphate load is unknown.

## Methods

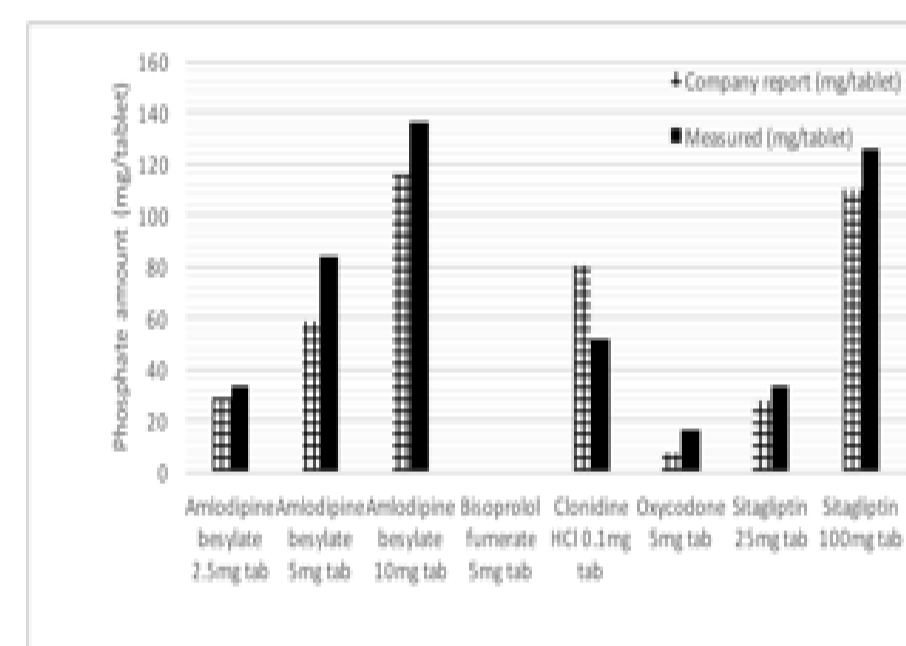


**Table 1. Medication formulations with phosphate.** 1744 medication formulations were reviewed, 11% (196) contained a phosphate salt. Commonly prescribed medications including cardiovascular, central nervous system and electrolytic, caloric and water balance drug classifications have a high proportion of formulations with phosphate.

Drug classification	Classification formulations with phosphate	Total Medications examined
Anti-anemia	100%	3
Antihistamines	2%	108
Blood formation and coagulation	0%	26
Cardiovascular	15%	287
Central Nervous System	13%	925
Chelating agents	0%	2
Electrolytic, caloric and water balance	16%	32
Gastrointestinal	1%	213
Hormone	17%	69
Muscle relaxant	0%	14
Other	20%	25
Smooth muscle relaxants	4%	26
Vitamins	29%	7
Xanthine Oxidase Inhibitors	0%	7
<b>Grand Total</b>	<b>11%</b>	<b>1744</b>



**Figure 1. Patient medication burden by drug classification.** Cardiovascular (CVS), central nervous system (CNS) acting and electrolytic, caloric and water balancing medications are the most commonly prescribed medications in ESKD patients. These medications are also 15%, 13% and 16% likely, respectively, to contain phosphate in the prescribed formulation



**Figure 2:** The phosphate content of select medications was measured and compared to reported values from the manufacturers.

**Table 2. Patient characteristics and medication characteristics.** 8 [5.5, 10] medications were prescribed daily and tablet burden was 13 [10,18]. 30% of patients with ESKD were taking medications that contained phosphate that was contributing 111 [67,168] mg to their daily phosphate load

Patient characteristics	Median [IQR]
Age, years (mean, SD)	71 ± 19.5
Male gender, n (%)	63 (61%)
Diabetes (count, %)	50 (48%)
Patient medication characteristics	Median [IQR]
Total prescribed medication number	8 [5.5,10]
Total prescribed pill burden	13 [10,18]
OTC medication number	3 [2, 4]
OTC burden	5 [2, 8]
Patient medication characteristics, pill phosphate content	
Patients taking phosphate containing medications, n (%)	31 (30%)
Phosphate per day in patients taking formulations with phosphate (mg) (Median [IQR])	111 [67, 168]

## Conclusion

Medications containing phosphate are frequently prescribed to dialysis patients and can provide a large portion of the recommended daily phosphate intake. Alternate manufacturers of certain frequently prescribed medications should be considered in this patient group to reduce oral phosphate exposure.

