Impact of pill burden on phosphorus control – highlights from a recent DOPPS analysis

Haemodialysis (HD) patients experience a high pill burden, approximately half of which is due to phosphate binders (PB). A recent study from Fissell et al evaluated the associations between PB pill burden, patient-reported PB non-adherence, and levels of serum phosphorus and parathyroid hormones.1

The study assessed data collected from 5,262 HD patients participating in the international Dialysis Outcomes and Practice Patterns Study (DOPPS). Information from DOPPS phase 4 (2009-11) in Australia, Belgium, Canada, France, Germany, Italy, Japan, New Zealand, Spain, Sweden and the UK was evaluated.

**PILL BURDEN**

Patient medical records were used to obtain pill burden, and revealed that there is a large variation in this measure between countries. The overall mean number of PB pills per day was 6.0 ± 4.3 and ranged from 7.4 ± 4.7 in the US to 3.9 ± 2.7 in France. The study also revealed that, across all countries, half of patients received at least 6 PB pills per day, with 13% receiving double this figure.

**ADHERENCE**

Self-reported non-adherence was 18%, with non-adherence defined as skipping PBs more than 3 times in the previous month. The highest rates were observed in the US (24%), with Belgium, Japan, Germany and Spain having the joint-lowest figure (12%). Only 55% of patients reported taking all their PBs. Among these, 46% saw their physician 2-3 times a week. Patients more likely to skip medication were younger, had higher serum phosphorus and PTH levels, more likely to have a psychiatric disorder, and less likely to be married.
Proportional odds logistic regression models used to estimate the association between number of phosphate binder (PB) pills per day and PB non-adherence (treated as a 4-category ordinal outcome variable). Both models adjusted for country and accounted for facility clustering effects using generalized estimating equations. Case-mix adjustment: age, sex, black race, body mass index, vintage, 13 comorbidities, albumin, creatinine, normalized protein catabolic rate, facility percent Kt/V<1.2, and facility percent catheter use. Trend was assessed by including number of PB pills per day as a continuous variable (P for trend=0.01 adjusted for country and 0.15 after case-mix adjustment).

Modified from: Fissell RB et al. 2015
Hemodial Int. 2015:7-9. doi:10.1111/hdi.12315

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Patients prescribed a higher number of pills were more likely to have serum phosphorus >5.5mg/dL, supporting the indication for increased PB prescription and/or non-adherence to the pill burden.

A trend towards an association between higher pill burden and low adherence was found (unadjusted p=0.01, adjusted p=0.15), and a significant association between low adherence and serum phosphorus levels. Patients who skipped PBs ≥7 times in the past month were much more likely to have serum phosphorus levels >5.5mg/dL (OR = 2.14, 95% CI: 1.68-2.72). Even patients who skipped PB medication at the lowest frequency, 1-3 times in the previous month, were more likely to have high serum phosphorus levels (OR = 1.36, 95% CI: 1.18-1.57).

The findings of this study are consistent with others and the authors suggest that a patient’s regimen should be assessed for non-adherence before pill burden is increased. The greater number of physician visits associated with total adherence highlights the role of healthcare providers in encouraging and raising awareness of the importance of taking all medication. The demographics of patients more likely to skip medication shows the part family support also plays in adherence.

Fissel and colleagues conclude that a simplified PB regimen, alongside dietary advice and education, could lead to improved patient outcomes.1

REFERENCE


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