

Medication Non-Adherence Predicts Hospitalization Rate and Healthcare Costs in Hemodialysis Patients

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INTRODUCTION

Medication adherence, estimated using the medication possession ratio (MPR), is often low among hemodialysis (HD) patients. This low medication adherence may partially result from overall medication burden; the average dialysis patient takes 10-12 medications per day.

According to the USRDS, an MPR >0.8 for individual ACEI/ARB, beta-blocker, statin, or oral hypoglycemic medications is associated with lower healthcare costs. However, given the high volume of medication usage in HD patients, one might expect that overall adherence, or entire-medication-regimen MPR, might have a stronger relationship to cost than individual drug MPR.

We evaluated the hypothesis that entire-medication-regimen MPR would be associated with increased hospitalization risk and healthcare costs in HD patients.

METHODOLOGY

- Data were generated on HD patients enrolled in a CMS ESRD demonstration project.
- We estimated medication adherence through a retrospective review of all pharmacy and medical claims for 663 HD patients from 1/06 to 6/09 (Table 1).
- We calculated MPR as: $(\sum \text{Medication Day's Supply}) / (\# \text{ Days between first fill \& last refill} + \text{Day's supply last refill})$.
- We used logistic regression models to determine the odds ratio of hospitalization (OR-hosp) for MPR ranges above and below 0.8-0.99 (reference range).
- We determined patient medication and hospital per member per month (PMPM) costs and hospitalization rate (per thousand patients years) for each MPR range.

RESULTS

Table 1. Patients Demographics

	Mean ± SD
N	663
Age (yr)	57.3 ± 13.8
% Male	59.4%
<i>Race and Ethnicity</i>	
% African American	16.9%
% Asian, Pacific Islander	3.4%
% Native American	0.2%
% Unknown ethnicity/race	11.8%
% Hispanic	53.5%
% Diabetic	58.5%

Table 2. Costs and Risk of Hospitalization Stratified by MPR

MPR	Member Months	Medical Cost	Rx PMPM Cost	Total PMPM cost	Admits (per 1000 pt yrs)
<0.4	1444	\$6,226	\$386	\$6,612	1820
0.4 -0.59	3184	\$6,392	\$553	\$6,944	2080
0.6 -0.79	4352	\$5,385	\$670	\$6,056	1701
0.8 -0.99	3117	\$4,493	\$866	\$5,359	1178
1.0 -1.19	1053	\$5,313	\$883	\$6,196	1641
> 1.2	460	\$5,962	\$943	\$6,906	1826

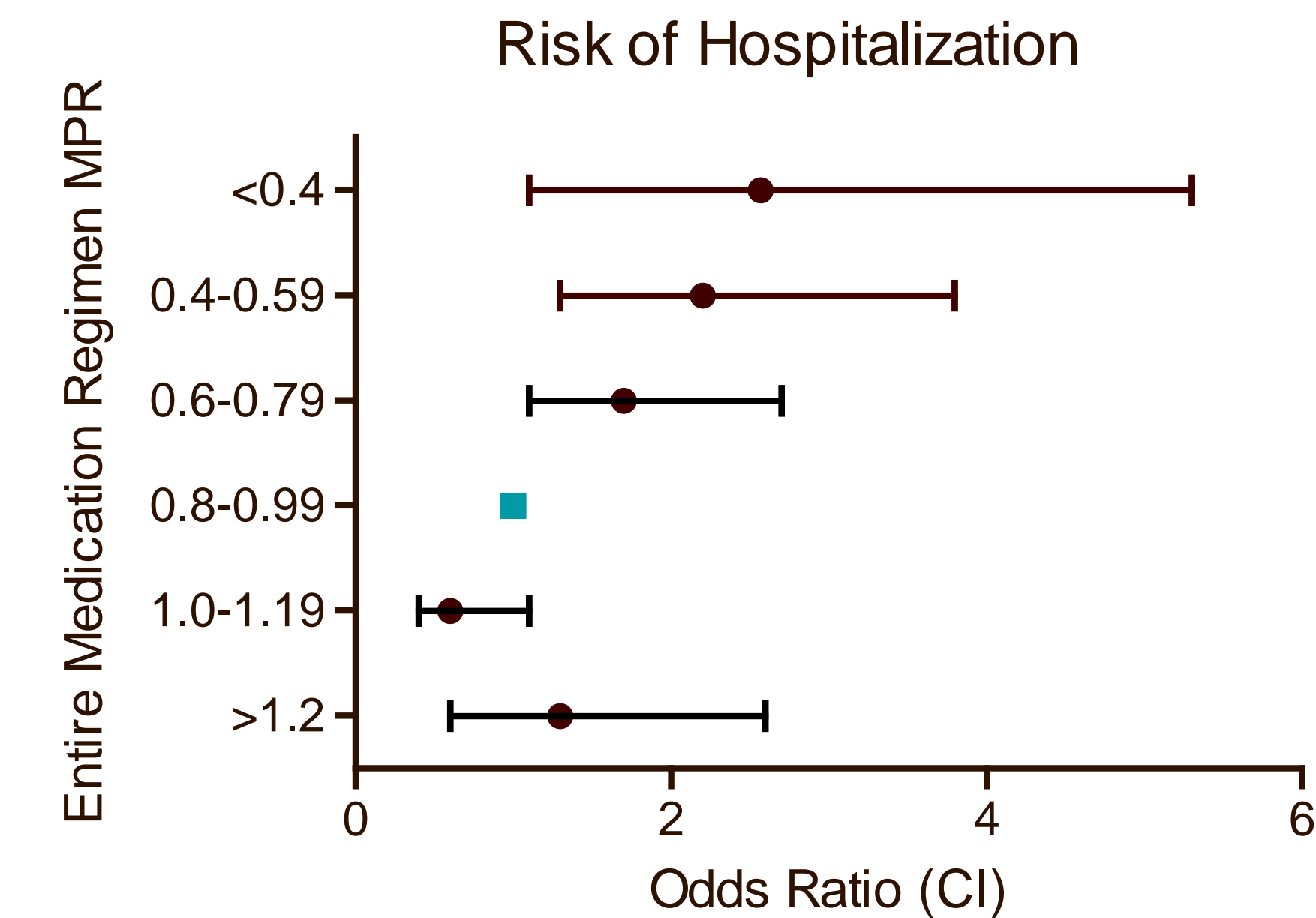


Figure 1. Odds Ratio for Risk of Hospitalization by Medication Possession Ratio (MPR)

SUMMARY of RESULTS

- MPR values <0.8 were associated with a greater hospitalization risk (Figure 1).
- Risk of hospitalization, PMPM costs and hospitalization rate each increased significantly as overall adherence decreased, as defined by entire medication regimen MPR (Table 2).

KEY LEARNINGS

- ✓ In HD patients, both hospitalization risk and total PMPM cost are directly related to entire medication regimen non-adherence.
- ✓ Methods to improve MPR may help reduce morbidity and cost in this fragile patient population.

LIMITATIONS

- Though analyses were adjusted, it is not possible to rule out residual confounding.

Note: This is a DaVita analysis of CMS demonstration experience; CMS will conduct an independent evaluation.

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