Universal Medication Schedule Prescribing Improves Adherence to Diabetes Medications among Patients who are at Risk for Non-Adherence

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Universal medication schedule (UMS) prescribing is 14% more likely to attain optimal adherence (PDC≥80%) to newly prescribed oral diabetes medications for older adults with low education who received a multi-daily regimen.

BACKGROUND

• The Universal Medication Schedule (UMS) standardizes prescriptions by explicitly stating when to take the medicine (i.e., morning, noon, evening, bedtime).

• The UMS was reviewed and highlighted by both the Institute of Medicine (IOM) and the U.S. Pharmacopeia (USP) as a health literacy best practice.

OBJECTIVE

• We estimated the impact of UMS prescribing on medication adherence among patients initiating oral diabetes medications.

• We also explored subgroups of patients with multi-daily dosing and/or elderly by education status.

METHODS

• Study Design: Retrospective cohort study.

• Study Population: Patients were 18 years and older with an initial fill of an oral diabetes medication at a Walgreens pharmacy between January to June 2014. The subgroup of patients at high risk for non-adherence included multi-daily dosing, age of 65 and older, or both, and designated as having a low education status. Patients received a proxy designation of low education when ≥10% of their census tract reported <9th grade education; all others were designated as standard education.

• Outcomes: Adherence was measured using Proportion of Days Covered (PDC) over 12 months. Optimal Adherence (OA) was determined by PDC≥80%.

• Statistical Analysis: Generalized estimating equations (GEEs) were used to compare whether UMS prescriptions were associated with better adherence compared to non-UMS prescriptions by education status after controlling age, gender, number of different drug classes, copay, insurance type, and socioeconomic indicators such as race, education, and median household income. All statistical analyses were conducted using SAS version 9.3 (SAS Institute Inc., Cary, NC).
RESULTS

- The study cohort included 484,758 patients who filled new prescriptions for 559,293 oral diabetes medications.

- Low education group: A total of 119,091 patients with a designation of low education were prescribed 139,979 medications; among them, 67,720 patients with 74,263 medications required multi-daily dosing. Of those with multi-daily dosing, 20,496 were age 65+ with 22,667 medications (Table 1).

- Standard education group: A total of 365,667 patients with a designation of standard education were prescribed 419,314 medications; among them, 187,356 patients prescribed 201,136 multi-daily dosing. Of those with multi-daily dosing, 68,947 were age 65+ with 75,024 medications (Table 1).

Table 1. Number of patients segmented by UMS labeling and non-UMS labeling, by education status, multi-daily dosing and age 65+

<table>
<thead>
<tr>
<th></th>
<th>Low Education Group</th>
<th>Standard Education Group</th>
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<tbody>
<tr>
<td></td>
<td>UMS</td>
<td>Non-UMS</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Mean Age</td>
</tr>
<tr>
<td>All</td>
<td>18,530</td>
<td>55.4</td>
</tr>
<tr>
<td>Multi-daily dose</td>
<td>8,080</td>
<td>55.2</td>
</tr>
<tr>
<td>Multi-daily dose and age 65+</td>
<td>2,036</td>
<td>72.7</td>
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<td></td>
<td>303,422</td>
<td>59.8</td>
</tr>
</tbody>
</table>

- Among patients with low education status, GEE models showed that those who received UMS prescriptions were significantly more likely to have OA compared to those who received non-UMS prescriptions (RR 1.04, 95% CI 1.02-1.07, p=0.001). The effect was largest for patients over 65 contending with multi-daily regimens (RR 1.14, 95% CI 1.07-1.21, p<0.001). Patients with standard education status were more likely to achieve OA following UMS prescriptions (RR 1.02, 95% CI 1.01-1.03, p=0.001), but there were no significant differences among subgroups (Figure 1).

CONCLUSION

- This study demonstrated that UMS prescribing is significantly associated with higher adherence to oral diabetes medications for older adults with low education who also received a multi-daily regimen.
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