COMPLIANCE WITH HEMOGLOBIN A1C TESTING RECOMMENDATIONS FOLLOWING INITIAL DIABETES DIAGNOSIS
Lilia Palmer PhD; Leigh Hansen MS, MBA
Truven Health Analytics, Bethesda, MD

INTRODUCTION

- The hemoglobin A1C (HbA1c) test is a marker for average blood glucose levels in the months prior to testing and is the favored measure of glycemic control for patients with diabetes. The American Diabetes Association recommends HbA1c testing every 3–4 months for Type II diabetes patients who use insulin or with results outside the HbA1c recommended range.

- Individuals with HbA1c values in excess of 70% are at greater risk for the microvascular and macrovascular complications of diabetes.1

- Previous work suggests that patients with poor glycemic control tend to receive HbA1c testing outside the recommended intervals.1,2

OBJECTIVE

- The objective of this study was to evaluate how compliance with HbA1c testing frequency varies based on initial HbA1c results.

METHODS

Study Design and Data Source
- Retrospective observational study using claims and laboratory data from January 2010 through October 2013 from the Truven Health MarketScan Research Databases. The MarketScan Research Databases include persons from all U.S. states, are de-identified, and are fully compliant with the Health Insurance Portability and Accountability Act of 1996.

Study Population
- The MarketScan Treatment Pathways tool was used to select the study patients and to describe characteristics of the target population.

- Individuals identified as having newly diagnosed type 2 diabetes were included in the study. The inclusion criteria for study inclusion:
  - Diabetes diagnosis (ICD-9-CM 250.x or 250.x2) between July 1, 2010 and October 31, 2012 which was established as the index date
  - Continuous medical, pharmacy, and laboratory eligibility 6 months prior to and 12 months post diabetes diagnosis.

- Patients cohorts were created based on first HbA1c test value (<7.0%—controlled; ≥7.0%—uncontrolled) within 120 days of diabetes diagnosis (30 days prior and 90 days following HbA1c test).

Outcome and Analysis
- Evidence of HbA1c testing among newly diagnosed type 2 diabetes patients was reported.

- Presence of subsequent HbA1c testing, including test result and time to test were evaluated for cohorts with evidence of initial HbA1c test.

RESULTS

Patient Characteristics
- 573,112 individuals were identified based on an incident diagnosis of type 2 diabetes
  - 23% met the continuous medical and pharmacy eligibility criteria

- Patient cohorts included the following based on the initial HbA1c (Figure 1):
  - Patients with controlled HbA1c (n=33,666)
  - Patients with uncontrolled HbA1c (n=19,033)
  - Patients with no evidence of HbA1c testing (n=80,362)

- Patients were similar in age; the majority of patients in the controlled HbA1c and no HbA1c cohorts were female (Table 1).

Figure 1. Patient Selection and Cohort Assignment

Table 1. Patient Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Controlled HbA1c</th>
<th>Uncontrolled HbA1c</th>
<th>No HbA1c</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD) Age</td>
<td>54.71 (12.96)</td>
<td>52.26 (11.67)</td>
<td>53.77 (14.78)</td>
</tr>
<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>49.10%</td>
<td>58.80%</td>
<td>44.03%</td>
</tr>
<tr>
<td>Female</td>
<td>50.90%</td>
<td>41.20%</td>
<td>55.97%</td>
</tr>
</tbody>
</table>

HbA1c Test Results
- Less than half of the study sample (60.4%) did not receive a HbA1c test within 90 days of their diabetes diagnosis; two-thirds of these patients had no evidence of an HbA1c test at any point during the study period.

- Among those with an initial test, 63.7% of controlled patients and 91.1% of uncontrolled patients had evidence of a subsequent HbA1c test.

- Mean time to subsequent HbA1c test (and result) among initially controlled patients was 235 days for patients with a HbA1c value <70% and 370 days for patients with a HbA1c value ≥7.0% (Figure 2).

Figure 2. Time from Initial HbA1c Test and Subsequent Test — Initially Controlled Patients

<table>
<thead>
<tr>
<th>Days since Test</th>
<th>Number of Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>235</td>
</tr>
<tr>
<td>90</td>
<td>370</td>
</tr>
</tbody>
</table>

- Mean time to subsequent HbA1c test (and result) among initially uncontrolled patients was 238 days for patients with a HbA1c value ≥7.0% and 212 days for patients with a HbA1c value ≤7.0% (Figure 3).

Figure 3. Time from Initial HbA1c Test and Subsequent Test — Initially Uncontrolled Patients

<table>
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</tr>
</tbody>
</table>

- All pairwise differences were statistically significant (p<0.0001).

LIMITATIONS

- This analysis was limited to patients with commercial health coverage and with continuous enrollment for at least one calendar year during the study period; these results may not be generalizable to patients with other insurance or without health insurance coverage.

- These results are not adjusted for accounts in general health and/or diabetes severity.

CONCLUSIONS

- In this analysis less than half of newly diagnosed patients had evidence of a HbA1c test; evidence of subsequent testing was suboptimal among patients initially good glycemic control but relatively high among those with initially poor glycemic control.

- Compliance with recommended timing for HbA1c testing is suboptimal in the majority of patients regardless of initial glycemic control.

- Importance of regular HbA1c evaluation should continue to be part of patient education—particularly for patients who may initially appear to have favorable glycemic control.

REFERENCES