Factors Influencing Best Practices in Treating Ulcerative Colitis: Results from a Predictive Modeling Analysis of Educational Outcomes Data

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INTRODUCTION

An essential component of improving patient outcomes through medical education is ensuring healthcare providers (HCPs) perform according to best practices. Although scholarly review articles and guidelines can help, providers also need feedback on how well they perform these practices. The factors that influence best practice behavior are important for delivering performance improvement. However, they do not provide information regarding the factors that influence best practice behavior. An activity must be successful in changing HCP behavior to determine whether or not it was successful. Understanding what these influencing factors are and how they impact best practice behavior can help develop future activities that continue what was successful and change what was not. While best practice behavior change can result in significant outcomes, there is a lack of understanding of the underlying factors. PredictCME is CME Outfitters’ exclusive method for applying a predictive modeling technique, known as CHAID (chi-square automatic interaction detection), to collect and analyze data. This presentation provides results from a PredictCME analysis of behavior data from an educational activity on ulcerative colitis (UC).

METHODS

Educational outcomes data were obtained from an educational activity on UC, which consisted of a live and streamed symposium at Digestive Diseases Week 2017, and integrated interactive educational components. An evaluation data were entered as predictors. CHAID analysis was conducted on data from the pre-survey activity which included two behavior questions related to applying unique risk/benefit profiles of biologic therapies to individual patient treatment. Data from these two questions were converted to a single behavior score (as described later), and used as the response variable in the analysis. Demographic, knowledge, confidence, and evaluation data were added as predictors.

The following two behavior questions were combined into a single aggregate “behavior” score as follows. For each question, participants selected “a. 100% of the time,” “b. 75% of the time,” or “c. 0% of the time.” The score was calculated across the two behavior questions, as possible scores for the aggregate behavior score were: 0, 1, 2. This aggregate score was used as the response variable in the PredictCME analysis.

METHODOLOGY

Behavior questions used for the aggregate behavior score:

1. The type of treatment(s) you would recommend to your patient with UC.
   - a. 0% of the time
   - b. 25% - 75% of the time
   - c. 100% of the time

2. The confidence in the primary, strongest predictor of performing the behavior was confidence (CHAID = 0.70, p < .05). The right two graphs reflect how the data were broken down, based on how the model classified the different percentages of participants who were “Confident” or “Not Confident” in performing the behavior. The confidence in the primary, strongest predictor of performing the behavior was confidence (CHAID = 0.70, p < .05).

RESULTS

Over 400 physicians participated in the activity, with 110 participants in the pre-survey used for the analysis. Figure 1 shows the distribution of specialty, academic degree, and years in practice of the participants.

RESULTS (cont.)

Discussion

• Results from the PredictCME analysis were not surprising, as previous studies found confidence in influence behavior to be a driver. Amnesic analyses using PredictCME data found confidence to be the strongest predictor of behavior in medical education activities.
• With the behavior questions related to applying biologic therapies to individual patient treatment, the question that best interpreted the data was confidence, which made intuitive sense. It is also notable that a secondary predictor was knowledge related to treatment decisions.
• When participants were asked about their confidence in performing the behavior, the finding was that participants who were more confident were almost equally likely to perform the behaviors (all p < .01), indicating that knowledge influences behavior on a conscious level, which is in line with the results of other studies. The finding on the behavior is not surprising as participants who were more confident were almost equally likely to perform the behaviors (all p < .01), indicating that confidence influences behavior on a conscious level, which is in line with the results of other studies.
• The factors that help or hinder the success of their educational activities, which in turn will help determine the factors that help or hinder the success of their educational activities. The findings from the study are currently being integrated into our planning for future PredictCME analyses as well as educational activities. For future activities, we are exploring ways to improve aspects of HCP confidence and knowledge that are most likely to improve best practice behaviors.

Table 1: Outcomes Survey Time Points and Corresponding Response Variables for Predictive Modeling

<table>
<thead>
<tr>
<th>Time Point</th>
<th>Response Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-survey (participants)</td>
<td>Academic Degree, Specialty, Years in Practice, Pre-survey Knowledge, Academic Degree, Confidence, Competence, Behavior</td>
</tr>
<tr>
<td>Post-survey (participants)</td>
<td>Academic Degree, Specialty, Years in Practice, Post-survey Knowledge, Academic Degree, Confidence, Competence, Behavior</td>
</tr>
<tr>
<td>Follow-up survey (participants)</td>
<td>Academic Degree, Specialty, Years in Practice, Follow-up Knowledge, Academic Degree, Confidence, Competence, Behavior</td>
</tr>
<tr>
<td>Change scores (matched participants, pre-/post-survey, pre-/post-follow)</td>
<td>Academic Degree, Specialty, Years in Practice, Change scores (matched participants, pre-/post-survey, pre-/post-follow)</td>
</tr>
</tbody>
</table>

Two graphs show the PredictCME output for the aggregate behavior score for the post-survey respondents, comprising all participants. Figure 2 shows the PredictCME output for the post-survey respondents, comprising all participants. Figure 3 shows the PredictCME output for the post-survey respondents, comprising all participants. Figure 4 shows the PredictCME output for the post-survey respondents, comprising all participants.

REFERENCES


