Effectiveness of the Newsletter *Treating Bipolar Depression in the Family Practice Setting* from the *Differential Diagnosis of Mood Disorders* Series

Judy L. Jarrell, MA, EdD, Lora Hasse, PhD, John R. Kues, PhD

*University of Cincinnati, Cincinnati, Ohio, USA*

**INTRODUCTION**

A search of the RDRB (Research and Development Resource Base) database for “enduring materials as agents of change” yielded a seminal work completed in 2007 by Marinopoulos et al [1], who examined 136 articles and 9 systematic reviews. In this report Marinopoulos et al state that “Understanding what CME tools and techniques are most effective in disseminating and retaining medical knowledge is critical to improving CME and thus diminishing the gap between evidence and practice.” This study revealed that the examined literature supported the concept that CME was effective, but the investigators went on to say that “[m]ore research is needed to determine with any degree of certainty which types of media, techniques, and exposure volumes as well as what internal and external audience characteristics are associated with improvements in outcomes.” Other searches of the RDRB and other appropriate databases revealed that there were many studies that examined the efficacy of case vignettes as teaching tools/methods, but only those cited in this article used case vignettes as learning assessment tools.

The newsletter *Treating Bipolar Depression in the Family Practice Setting* is issue number 6 of a 7-issue newsletter series published in July 2006, *Differential Diagnosis of Mood Disorders*, a supplement to the journal *Family Practice Recertification*. The University of Cincinnati designated the newsletter supplement a maximum of 2 AMA PRA Category 1 Credits™. Participation in the outcomes survey was designated for an additional AMA PRA Category 1 Credit™.

**Background:** Outcomes™, along with the University of Cincinnati and Avalon Clinical Communications, examined the effectiveness of a newsletter, *Treating Bipolar Depression in the Family Practice Setting* (issue 6 of the *Differential Diagnosis of Mood Disorders* newsletter series of 7 issues). The newsletter, designed to provide information to family physicians on the treatment of bipolar depression, was supported by an educational grant from AstraZeneca. The purpose of the study was to determine the efficacy of the enduring material (newsletter) as determined by long-term retention of information and increased confidence level of physicians participating in the study. Here we report those findings and also highlight the case-vignette method for determining long-term evidence-based learning.

**Methods:** Effectiveness was measured by use of a survey composed of evidence-based case vignettes on which questions about physician confidence and barriers to the optimal screening and management of patients with bipolar depression were based. Surveys were administered to a group of participants (n = 85) and a similar group of nonparticipants (n = 56), allowing for assessment and reporting based on the following questions:

- How do practice approaches to the diagnosis and management of mood disorders by newsletter participants compare with those of nonparticipants?
- Does adherence to clinical practice guidelines and evidence differ between participants and nonparticipants?
- Were there differences in perceived barriers to the optimal diagnosis and management of mood disorders associated with newsletter participation?
- Was there a difference in the confidence of managing mood disorders between participants and nonparticipants?

Effect size for this activity was calculated by using the publication’s targeted audience of family physicians.

**Results:** The average education effectiveness score for the participants was 67%. The average nonparticipant score was 57%, and the average difference between scores was 10%. This average difference between the 2 groups of physicians equals an effect size of 0.58 on a scale of –3.0 through +3.0.

**Conclusions:** When presented with case vignettes, participants were 35% more likely to make clinical decisions consistent with evidence-based recommendations covered by the program than a similar group of physicians who had not been exposed to the program.
We are conducting a brief survey to determine the relevance of this particular activity to your practice. Your responses to the following case questions will allow us to better determine educational needs in order to impact future CME programming. We would appreciate your taking 10-15 minutes to complete this survey. All responses are considered confidential and reported only in aggregate form; responses are never linked to participants. Please return this survey in the accompanying envelope or by Fax to 865-315-0826.

Case #1: A 28-year-old woman presents to your office with symptoms of progressive sad mood for the last two months after the breakup of a relationship. Symptoms include limited energy, difficult time concentrating, poor sleep continuity, tearfulness, and depressed feelings. She denied suicidal thoughts or psychotic symptoms. Upon further questioning, she reports cyclical variations in her moods that started in her early twenties. The depressed period that she is currently experiencing was preceded by a period of racing thoughts, feeling as though she could survive on 1-2 hours of sleep/night, excessive spending on things she did not need, and preoccupation with sex.

Past medical history: hypothyroidism – stable on current replacement therapy x 2 years

Last menstrual cycle: 1 week ago

Medications: oral contraceptive, multivitamin, thyroid replacement hormone

1. How would you best manage this patient’s depression? (select only one)

- Fluoxetine 20mg/d
- Lithium 300mg tid
- Quetiapine 50mg qhs
- Refer her to a psychotherapist in your area
- Reassure that sadness is normal after a breakup and that the feelings will dissipate soon

The patient above was treated with lamotrigine with progressive dose increases to 100 mg/day with gradual improvement of her depressive symptoms over a 6-week period. She continued to do well on this regimen until her mother died unexpectedly 9 months later. Her previous symptoms of depressed mood, low energy, and concentration, and difficulty sleeping have recurred and are causing her to perform poorly at work.

2. What would be the next step in managing this patient’s depression? (select only one)

- Change to lithium
- Change to fluoxetine
- Increase lamotrigine
- Change to olanzapine-fluoxetine
- Add quetiapine at bedtime

The patient returns to your office 4 weeks later after an increase of lamotrigine to 200 mg/day. She states she has been compliant with your recommended therapy, but she feels that she is crying continuously and has stopped interacting with all of her friends. She has missed 2 days of work because of fatigue and has lost 5 lbs since the last visit. She is now having thoughts that life would be better if she were not alive. You verify her safety.

3. Which of the following would you now recommend to manage this patient’s depression? (select only one)

- Discontinue lamotrigine and begin quetiapine
- Increase lamotrigine
- Add fluoxetine
- Add lithium
- Continue present pharmacotherapy and refer to a psychotherapist
Case # 2: A 30-year-old male presents with depressed mood for the last 4 weeks. His symptoms include poor energy, limited interest in social activities with friends, early morning awakening with an inability to return to sleep, and passive thoughts of suicide without intent or plan. A Mood Disorder Questionnaire that he completed does not reveal bipolar disorder. Upon further questioning of his background, he reveals that at age 25 he was treated for similar symptoms to those he currently presents with. He does not recall the drug that he was treated with, but notes that in the subsequent 4 weeks after starting treatment, he experienced racing thoughts, became involved with 3 sexual partners (which was out of character for him), and purchased a motorcycle which he could not afford but felt compelled to buy.

Past medical history: acne
Medications: minocycline 100mg/d

4. Which of the following medications is contraindicated as monotherapy for this patient? (select only one)
   - Antidepressant
   - Lithium
   - Anticonvulsant/mood stabilizer
   - Traditional antipsychotic
   - Next generation atypical antipsychotic

5. Which of the following would you recommend to help detect bipolar disorder in a patient presenting with depression? (select only one)
   - Structured clinical interview for DSM-IV (SCID-I)
   - Trial of lamotrigine to see if symptoms improve
   - Beck Depression Inventory
   - Hamilton Depression Rating Scale
   - Mood Disorder Questionnaire

Case # 3: A 35-year-old male with a known history of bipolar II disorder presents with symptoms of depressed mood, poor energy and concentration, binge eating of sweets with 10 pounds weight gain, and a lack of interest in playing with his children, which usually gives him great joy but was now causing excruciating guilt. In the past, he has been placed on bupropion when he gets these episodes until he returns to a normal mood, usually 4-5 weeks. When he starts to feel better emotionally, he stops the bupropion, usually without calling to alert his physician. The last time he had a depressive episode, 12 months ago, he and his physician decided he should continue on the bupropion indefinitely. He initially agreed and was compliant with therapy for 6 months, but had been feeling pretty good and wanted to come off it. Upon further questioning, he reports that even while taking the bupropion, he frequently had periods when felt gloomy and was unusually short-tempered with his family. He also called in sick a few times because of severe fatigue. He has had the diagnosis of bipolar disorder for 5 years and feels he is just now coming to grips with his diagnosis. He plans to be more compliant with your recommendations.

Past History: benign essential tremor
Medications: none

6. Which of the following treatment options has been shown to prevent future depressive episodes? (select only one)
   - Bupropion 400mg/d
   - Lithium 300mg tid
   - Lamotrigine 25mg/d
   - Olanzapine-fluoxetine 6/25 dose/d
   - Quetiapine 50mg qhs
7. Which of the following characteristics of this patient is most indicative of the potential for future depression recurrence? (select only one)

- Slow speed of symptom improvement with prior treatment
- Symptoms of hyperphagia and weight gain
- Residual mood symptoms at initial recovery
- Premature discontinuation of prior therapy
- Late age of diagnosis

Case # 4: A 29-year-old female is brought to her appointment by her boyfriend because she felt she was “not her usual self.” For the last 3 weeks, she has been staying up all night, wanting sex from him 2 or 3 times nightly, has been pulled over for driving recklessly and has purchased a new convertible when she was recently laid off from her job and can’t make the payments on her current automobile. All of these are out of character for her usually conservative nature. Two months ago, she saw another physician for depressed feelings surrounding the lay-off and was placed on fluoxetine 20mg. This medication was chosen because her sister had been on it and had responded well, even losing 15 pounds. As the patient is obese, the latter point was very important in her willingness to accept the medication.

Past Medical History: obesity (height 5’3”, weight 220 pounds)
Medications: oral contraceptives, Atkins Diet Supplements

8. Which of the following would be the most appropriate recommendation? (select only one)

- Increase fluoxetine
- Continue fluoxetine and add lithium
- Continue fluoxetine and add quetiapine
- Discontinue fluoxetine and begin lamotrigine
- Discontinue fluoxetine and begin valproate

9. Given the patient’s weight concerns, which of the following atypical antipsychotic would you recommend? (select only one)

- Olanzapine
- Clozapine
- Quetiapine
- Aripiprazole
- Risperidone

10. In your experience, which of the following is the greatest barrier to the optimal management of bipolar disorder? (select only one)

- Patient adherence
- Medication related side effects
- Distinguishing bipolar disorder from depression
- Insufficient evidence in regard to treatment options
- Patients comorbidities

11. How confident are you in your ability to manage acute depression in patients with bipolar II disorder? (circle only one)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not confident at all</td>
<td>somewhat confident</td>
<td>very confident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Study survey developed by Outcomes.
12. What is the minimal level of evidence you accept as the basis for determining an appropriate treatment regimen? (circle one number)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phase II study abstract</td>
<td>Phase II study peer-reviewed publication</td>
<td>Phase III study abstract</td>
<td>Phase III study peer-reviewed publication</td>
<td>Clinical practice guideline</td>
</tr>
</tbody>
</table>

13. Approximately how many patients do you see each week? _______________ /per week

14. Approximately what percentage of your patients has bipolar disorder? _______________%

15. How many years have you been in practice? ____________

16. How many physicians are in your practice (including yourself)? ________________

17. **Physician Specialty**
   - Family Practice
   - Other ________________

18. **Practice Type**
   - Private
   - Hospital
   - Academic
   - Non-practicing
   - Other ________________

19. **Practice Location**
   - Urban
   - Suburban
   - Rural

Return this survey in the accompanying envelope or by fax (toll free) to 866-315-0826. We sincerely appreciate your time and want to recognize your effort. Therefore, PLEASE print your e-mail address clearly so we can email the results of the survey when the study is complete. All personal information is confidential and will not be sold or shared with any other company.

Name: ______________________________ Degree: ____________________________

E-mail: ______________________________

Phone #: ______________________________ Fax #: ______________________________

Study survey developed by Outcomes.
MATERIALS AND METHODS

Survey development was carried out by Outcomes (Figure). This company, established in 2001, applies scientific research methodologies to the development of evaluation instruments and analysis. Outcomes reviewed the educational content of *Treating Bipolar Depression in the Family Practice Setting* to define a series of key measurement indicators (KMIs), defined by Outcomes as individual evidence-based statements that outline the expectations associated with content of an educational activity. KMIs were used in framing questions related to case vignettes, which were presented in survey format to program participants and a similar group of nonparticipants selected from surveys returned by nonparticipant respondents with similar degree and practice characteristics. These case vignettes were designed to assess whether the diagnostic and therapeutic choice responses of participants were consistent with the content of the educational activity, as well as whether practice choices of participants were different from practice choices of nonparticipants.

KMIs identified for this study included the following:

- Medications having the strongest evidence of efficacy for acute treatment of depression in patients with bipolar disorder are the olanzapine-fluoxetine combination, quetiapine, and lamotrigine [2].
- For patients who suffer a breakthrough depressive episode while on a mood stabilizer, optimize the medication dosage [3,4].
- In a patient with breakthrough depressive episode occurring despite optimization of mood stabilizer dose, consider olanzapine-fluoxetine combination or quetiapine [4].
- Prescription of antidepressants in the absence of a mood stabilizer is not recommended for bipolar patients [4,5].
- If an antidepressant is added to a traditional mood stabilizer, tricyclics and venlafaxine should be avoided because of their potential to induce higher cycling rates [2,3,5].
- Both lamotrigine and lithium appear to have substantial utility in the maintenance treatment of patients with bipolar disorder; however, the utility of lamotrigine is somewhat greater for the prevention of depressive compared with manic episodes, and the opposite is true for lithium [2,4].
- Recurrence is associated with the presence of residual mood symptoms at initial recovery [6].
- In a patient experiencing a manic/hypomanic episode, antidepressants should be tapered and discontinued [2-4].
- Use of a screening instrument, such as the Mood Disorder Questionnaire, can substantially improve recognition of patients with bipolar disorder, particularly among depressed patients [7].
- Clozapine and olanzapine are associated with increased risks of developing diabetes mellitus and dyslipidemia, as well as more weight gain than other antipsychotics (ie, perphenazine, quetiapine, risperidone, and ziprasidone) [8].

Survey items were designed to measure clinical practice choices based on adherence to evidence cited on the diagnosis and management of bipolar depression. Additional survey items were included to assess attitudes toward management of bipolar depression.

Case Vignettes

Very few CME efficacy studies have been identified as having used case vignettes as an evaluation method for learning retention, and none have used case vignettes as an enduring material in particular. Case vignettes, however, have gained considerable support for their value in predicting physician practice patterns. Results from research completed in 2000 and 2004 demonstrated that case vignettes (compared to chart review and standardized patients) are a valid and comprehensive method to measure a physician’s process of care in actual clinical practice. Furthermore, case vignettes are more cost-effective and less invasive than other means of measurement [9,10]. In an editorial article in 2000 [11], Russ-Eft stated: “The major advantage in using the case study approach is its potential to show the rich complexity of reality, perhaps better than any other method. And it provides a forum for testing the principles on which the cases are built.”

Survey instruments were distributed to the participants as a supplement to 1000 newsletters targeting a physician population that identified an interest in participating in an outcome assessment. This group was offered 1 *AMA PRA Category 1 Credit™* for completing the survey (identified by Outcomes). The survey was also sent by facsimile to a group of family physicians (fax numbers were obtained from the American Association of Family Physicians) who were offered a $20 Amazon.com gift certificate for completing the survey. Questions were included in the survey to assess whether physicians had studied the newsletter. Responses to these questions were used to determine physician placement in the participant or nonparticipant sample and to match the nonparticipant group to the participant group.

The educational effectiveness measurement instrument used was the Outcomes CME Quality of Education Index™, which measured differences between participant and nonparticipant diagnostic and therapeutic choices and calculated the difference between their average scores. Case vignette responses were compared to guidelines and clinical evidence for this activity. The difference between the 2 groups is reported in a standardized format as an effect size with a range of –3 through +3. A positive effect size indicates that participants scored higher than nonparticipants. The average effect size of didactic CME events was 0.34, and the average effect size of interactive and mixed educational sessions was 0.67 [12].
STUDY RESULTS

- Newsletter participants were significantly more likely than nonparticipants to choose one of the most efficacious management options for treatment of depression in a patient with bipolar disorder (84% versus 53%).
- Given a patient with a breakthrough depressive episode while on a mood stabilizer, participants were significantly more likely than nonparticipants to choose an evidence-based treatment option (93% versus 75%).
- Participants recognized more frequently than nonparticipants that a patient with residual mood symptoms at initial recovery is more likely to experience a future recurrence of depression (73% versus 48%).
- Newsletter participants were more confident than nonparticipants in their ability to manage acute depression in patients with bipolar II disorder. On a 1 to 10 scale, with 1 being “not confident at all” and 10 being “very confident,” participants rated themselves, on average, at a confidence level of 6.07, versus a nonparticipant rating of a 4.70.
- Both participants and nonparticipants cited “patient adherence” and “distinguishing bipolar disorder from depression” as the major barriers to the optimal management of bipolar disorder. Participants cited “distinguishing bipolar disorder from depression” as the greatest barrier less frequently than nonparticipants (38% versus 46%), a finding that could be associated with participant participation in the newsletter series.
- Participants were more likely than nonparticipants (67% versus 56%) to recognize the importance of discontinuing antidepressant therapy in a patient with a previous diagnosis of depression who, after initiating antidepressant treatment, clearly displays symptoms of a manic episode.

The participant (n = 85) and nonparticipant (n = 56) responses to each of the case vignettes follow. To maintain confidentiality, all data and reporting are furnished in aggregate. An asterisk (*) denotes an evidence-based response option.

### Case #1 (Visit 1)

A 28-year-old woman presents to your office with symptoms of progressive sad mood for the last 2 months after the breakup of a relationship. Symptoms include limited energy, difficulty concentrating, poor sleep continuity, tearfulness, and depressed feelings. She denied suicidal thoughts and psychotic symptoms. Upon further questioning, she reports cyclical variations in her moods that started in her early twenties. The depressed period that she is currently experiencing was preceded by a period of racing thoughts, feeling as though she could survive on 1 to 2 hours of sleep a night, excessive spending on things she did not need, and preoccupation with sex.

Medical history: hypothyroidism—stable on current replacement therapy for 2 years; last menstrual cycle: 1 week ago; medications: oral contraceptive, multivitamin, thyroid replacement hormone.

**Question #1a: How would you best manage this patient’s depression? (Select only one.)**

From the 6 response choices, 4.7% of the participants and 16.4% of the nonparticipants chose “fluoxetine 20 mg/d”; 8.2% of the participants and 18.2% of the nonparticipants chose “lithium 300 mg tid”; 12.9% of the participants and 14.5% of the nonparticipants chose “quetiapine 50 mg qhs*”; 70.6% of the participants and 38.2% of the nonparticipants chose “lamotrigine 25 mg/d*”; 3.5% of the participants and 12.7% of the nonparticipants chose “refer her to a psychotherapist in your area”; and 0% of both groups chose the last response, “reassure that sadness is normal after a breakup and that the feelings will dissipate soon” (Table 1).

### Case #1 (Second Visit)

This patient was treated with lamotrigine with progressive dose increases to 100 mg/d with gradual improvement of her depressive symptoms over a 6-month period. She continued to do well on this regimen until her mother died unexpectedly 9 months later. The patient’s previous symptoms of depressed mood, low energy and concentration, and difficulty sleeping have recurred and are causing her to perform poorly at work.

| Table 1. Case #1a: How would you best manage this patient’s depression? |
|-----------------------------------------------|--------------|--------------|
| **Possible recommendations (select only one)** | Participants (n = 85) | Nonparticipants (n = 56) |
| Fluoxetine 20 mg/d | 4.7% | 16.4% |
| Lithium 300 mg tid | 8.2% | 18.2% |
| Quetiapine 50 mg qhs* | 12.9% | 14.5% |
| Lamotrigine 25 mg/d* | 70.6% | 38.2% |
| Refer her to a psychotherapist in your area | 3.5% | 12.7% |
| Reassure that sadness is normal after a breakup and that the feelings will dissipate soon | 0% | 0% |

*Evidence-based choice; tid indicates 3 times a day; qhs, at bedtime.
Table 2. Case #1b: What would be the next step in managing this patient’s depression?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change to lithium</td>
<td>0%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Change to fluoxetine</td>
<td>0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Increase lamotrigine*</td>
<td>83.3%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Change to olanzapine-fluoxetine</td>
<td>7.1%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Add quetiapine at bedtime*</td>
<td>9.5%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.

Question #1b: What would be the next step in managing this patient’s depression? (Select only one.)

From the 5 possible responses, 0% of the participants and 1.6% of the nonparticipants chose “change to lithium”; 0% of the participants and 3.6% of the nonparticipants chose “change to fluoxetine”; 83.3% of the participants and 71.4% of the nonparticipants chose “increase lamotrigine”*; 7.1% of the participants and 19.6% of the nonparticipants chose “change to olanzapine-fluoxetine”; and 9.5% of the participants and 3.6% of the nonparticipants chose “add quetiapine at bedtime”* (Table 2).

**Case #1 (third visit):** The patient returns to your office 4 weeks later after an increase of lamotrigine to 200 mg/d. She states she has been compliant with your recommended therapy, but she feels she is crying continuously and has stopped interacting with all of her friends. She has missed 2 days of work because of fatigue and has lost 5 pounds since the last visit. She is now having thoughts that life would be better if she were not alive. You verify her safety.

Question #1c: Which of the following would you now recommend to manage this patient’s depression? (Select only one.)

Of the 5 possible responses, 18.5% of the participants and 5.5% of the nonparticipants chose “add quetiapine”*; 6.2% of the participants and 3.6% of the nonparticipants chose “increase lamotrigine”; 40.7% of the participants and 49.1% of the nonparticipants chose “add fluoxetine”; 8.6% of the participants and 5.5% of the nonparticipants chose “add lithium”; and 25.9% of the participants and 36.4% of the nonparticipants chose “continue present pharmacotherapy and refer to a psychotherapist” (Table 3).

**Case #2**
A 30-year-old man presents with depressed mood for the last 4 weeks. His symptoms include poor energy, limited interest in social activities with friends, early morning awakening with an inability to return to sleep, and passive thoughts of suicide without intent or plan. A Mood Disorder Questionnaire that he completed does not reveal bipolar disorder. On further questioning of his background, he reveals that at age 25 he was treated for similar symptoms to those with which he currently presents. He does not recall the drug with which he was treated, but notes that in the subsequent 4 weeks after starting treatment, he experienced racing thoughts, became involved with 3 sexual partners (which was out of character for him), and purchased a motorcycle, which he could not afford but felt compelled to buy.

Medical history: acne; medications: minocycline 100 mg/d.

Question #1: Which of the following medications is contraindicated as monotherapy for this patient? (Select only one.)

From the 5 possible response choices, 79.8% of the participants and 74.1% of the nonparticipants chose “antidepressant”*; 4.8% of the participants and 5.6% of the nonparticipants chose “lithium”; 4.8% of the participants and 7.4% of the nonparticipants chose “anticonvulsant/mood stabilizer”; 6.0% of the participants and 9.3% of the nonparticipants chose “traditional antipsychotic”*; and 4.8% of the

Table 3. Case #1c: Which of the following would you now recommend to manage this patient’s depression?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add quetiapine*</td>
<td>18.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Increase lamotrigine</td>
<td>6.2%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Add fluoxetine</td>
<td>40.7%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Add lithium</td>
<td>8.6%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Continue present pharmacotherapy and refer to a psychotherapist</td>
<td>25.9%</td>
<td>36.4%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.
participants and 3.7% of the nonparticipants chose “next generation atypical antipsychotic” (Table 4).

Question #2: Which of the following would you recommend to help detect bipolar disorder in a patient presenting with depression? (Select only one.)

From the 5 possible response choices, 22.6% of the participants and 25.5% of the nonparticipants chose “structured clinical interview for DSM-IV (SCID-I)*”; 9.5% of the participants and 10.9% of the nonparticipants chose “trial of lamotrigine to see if symptoms improve*”; 0% of the participants and 1.8% of the nonparticipants chose “Beck Depression Inventory”; 0% of the participants and 3.6% of the nonparticipants chose “Hamilton Depression Rating Scale”; and 67.9% of the participants and 58.2% of the nonparticipants chose “Mood Disorder Questionnaire*” (Table 5).

Case #3

A 35-year-old man with a known history of bipolar II disorder presents with symptoms of depressed mood, poor energy and concentration, binge eating of sweets with 10 pounds weight gain, and a lack of interest in playing with his children, which usually gives him great joy but was now causing excruciating guilt. In the past, he has been placed on bupropion when he gets these episodes until he returns to a normal mood, usually 4 to 8 weeks later. When he starts to feel better emotionally, he stops the bupropion, usually without calling to alert his physician. The last time he had a depressive episode 12 months ago, he and his physician decided he should continue on the bupropion indefinitely. He initially agreed and was compliant with therapy for 6 months, but had been feeling pretty good and wanted to come off it. On further questioning, he reports that even while taking the bupropion, he frequently had periods when he felt gloomy and was unusually short-tempered with his family. He also called in sick a few times because of severe fatigue. He has had the diagnosis of bipolar disorder for 5 years and feels he is just now coming to grips with his diagnosis. He plans to be more compliant with your recommendations.

History: benign essential tremor; medications: none.

Question #1: Which of the following treatment options has been shown to prevent future depressive episodes? (Select only one.)

From the 5 possible response choices, 9.6% of the participants and 5.7% of nonparticipants chose “bupropion 400 mg/d”; 15.7% of the participants and 7.5% of the nonparticipants chose “lithium 300 mg tid*”; 18.1% of the participants and 41.5% of the nonparticipants chose “lamotrigine 25 mg/d*; 54.2% of the participants and 37.7% of the nonparticipants chose “olanzapine-fluoxetine 6/25 dose/d”; and 2.4% of the participants and 7.5% of the nonparticipants chose “quetiapine 50mg qhs” (Table 6).

Question #2: Which of the following characteristics of this patient is most indicative of the potential for future depression recurrence? (Select only one.)

Table 4. Case #2; Question #1: Which of the following medications is contraindicated as monotherapy for this patient?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antidepressant*</td>
<td>79.8%</td>
<td>74.1%</td>
</tr>
<tr>
<td>Lithium</td>
<td>4.8%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Anticonvulsant/mood stabilizer</td>
<td>4.8%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Traditional antipsychotic*</td>
<td>6.0%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Next-generation atypical antipsychotic</td>
<td>4.8%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.

Table 5. Case #2; Question #2: Which of the following would you recommend to help detect bipolar disorder in a patient presenting with depression?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured clinical interview for DSM-IV (SCID-I)*</td>
<td>22.6%</td>
<td>25.5%</td>
</tr>
<tr>
<td>Trial of lamotrigine to see if symptoms improve*</td>
<td>9.5%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Beck Depression Inventory</td>
<td>0%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Hamilton Depression Rating Scale</td>
<td>0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Mood Disorder Questionnaire*</td>
<td>67.9%</td>
<td>58.2%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.
From the 5 possible response choices, 6.0% of the participants and 5.6% of nonparticipants chose “slow speed symptom improvement with prior treatment”; 0% of the participants and 1.9% of the nonparticipants chose “symptoms of hyperphagia and weight gain”; 72.6% of the participants and 48.1% of the nonparticipants chose “residual mood symptoms at initial recovery*”; 21.4% of the participants and 40.7% of the nonparticipants chose “premature discontinuation of prior therapy”; and 0% of the participants and 3.7% of the nonparticipants chose “late age of diagnosis” (Table 7).

Case #4
A 29-year-old woman is brought to her appointment by her boyfriend because he felt she was “not her usual self.” For the last 3 weeks, she has been staying up all night, wanting sex from him 2 or 3 times nightly, has been pulled over for driving recklessly, and has purchased a new convertible although she was recently laid off from her job and can’t make the payments on her current automobile. All of these are out of character for her usually conservative nature. Two months ago, she saw another physician for depressed feelings surrounding the layoff and was placed on fluoxetine 20 mg. This medication was chosen because the patient’s sister had been on it and had responded well, even losing 15 pounds. Because the patient is obese, the latter point was very important in her willingness to accept the medication.

Medical history: obesity (height 5’ 3”, weight 220 pounds); medications: oral contraceptives, Atkins diet supplements.

Question #1: Which of the following would be the most appropriate recommendation? (Select only one.)
From the 5 possible response choices, 3.5% of the participants and 1.8% of the nonparticipants chose “increase fluoxetine”; 12.9% of the participants and 18.2% of the nonparticipants chose “continue fluoxetine and add lithium”; 16.5% of the participants and 23.6% of the nonparticipants chose “continue fluoxetine and add quetiapine”; 62.4% of the participants and 52.7% of the nonparticipants chose “discontinue fluoxetine and begin lamotrigine*”; and 4.7% of the participants and 3.6% of the nonparticipants chose “discontinue fluoxetine and begin valproate*” (Table 8).

Question #2: Given the patient’s weight concerns, which of the following atypical antipsychotics would you recommend? (Select only one.)
From the 5 possible response choices, 14.6% of the participants and 19.2% of the nonparticipants chose “olanzapine”; 13.4% of the participants and 3.8% of the nonparticipants chose “clozapine”; 28.0% of the participants and 42.3% of the nonparticipants chose “quetiapine*”; 30.5% of the participants and 21.2% of the nonparticipants chose “aripiprazole*”; and 13.4% of the participants and 13.5% of the nonparticipants chose “risperidone” (Table 9).

Affective Assessment
In addition to the knowledge assessment case vignettes/test questions, 3 affective assessment questions (A-C) were included in the survey:

Table 6. Case #3; Question #1: Which of the following treatment options has been shown to prevent future depressive episodes?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bupropion 400 mg/d</td>
<td>9.6%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Lithium 300 mg tid*</td>
<td>15.7%</td>
<td>7.5%</td>
</tr>
<tr>
<td>Lamotrigine 25 mg/d*</td>
<td>18.1%</td>
<td>41.5%</td>
</tr>
<tr>
<td>Olanzapine-fluoxetine 6/25 dose/d</td>
<td>54.2%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Quetiapine 50 mg qhs</td>
<td>2.4%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

*Evidence-based choice; tid indicates 3 times a day; qhs, at bedtime.

Table 7. Case #3; Question #2: Which of the following characteristics of this patient is most indicative of the potential for future depression recurrence?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slow speed symptom improvement with prior treatment</td>
<td>6.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Symptoms of hyperphagia and weight gain</td>
<td>0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Residual mood symptoms at initial recovery*</td>
<td>72.6%</td>
<td>48.1%</td>
</tr>
<tr>
<td>Premature discontinuation of prior therapy</td>
<td>21.4%</td>
<td>40.7%</td>
</tr>
<tr>
<td>Late age of diagnosis</td>
<td>0%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.
A: In your experience, which of the following is the greatest barrier to the optimal management of bipolar disorder?

From the 5 possible responses, 36.5% of the participants and 38.2% of the nonparticipants chose “patient adherence”; 14.1% of the participants and 9.1% of the nonparticipants chose “medication-related side effects”; 37.6% of the participants and 45.5% of the nonparticipants chose “distinguishing bipolar disorder from depression”; 0% of the participants and 3.6% of the nonparticipants chose “insufficient evidence in regard to treatment options”; and 11.8% of the participants and 3.6% of the nonparticipants chose “patients’ comorbidities.”

B: How confident are you in your ability to manage acute depression in patients with bipolar II disorder?

The mean confidence of the participants (on a scale of 1-3 = not confident at all, 4-7 = somewhat confident, 8-10 = very confident) was 6.07, and the mean confidence of the nonparticipants was 4.70.

C: What is the minimal level of evidence you accept as the basis for determining an appropriate treatment regimen?

From the 5 possible responses, 0% of the participants and 0% of the nonparticipants chose “phase II study abstract”; 3.8% of the participants and 13.2% of the nonparticipants chose “phase II study peer-reviewed publication”; 44.3% of the participants and 37.7% of the nonparticipants chose “phase III study abstract”; 44.3% of the participants and 37.7% of the nonparticipants chose “phase III study peer-reviewed publication”; and 48.1% of the participants and 43.4% of the nonparticipants chose “clinical practice guideline.”

Practice and Physician Characteristics

At the end of the questionnaire, 8 practice and physician characteristic questions (i-viii) were asked:

i: Approximately how many patients do you see each week?
Participants reported an average of 89.71 patients per week; nonparticipants, 106.43.

ii: Approximately what percentage of your patients has bipolar disorder?
Participants reported a mean percentage of 5.04%; nonparticipants, 4.31%.

iii: How many years have you been in practice?
Participants reported an average of 20.90 years in practice; nonparticipants, 17.29.

iv: How many physicians are in your practice (including yourself)?
Participants reported an average of 4.78 physicians in their practices; nonparticipants, 3.69.

v: What is your physician specialty?
A total of 91.7% of participants and 98.2% of nonparticipants reported “family practice”; 8.3% of participants and 1.8% of nonparticipants reported “other (general practice, generalist, geriatrics).”

vi: What is your practice type?
A total of 69.7% of the participants and 88.9% of the nonparticipants reported “private”; 6.6% of the participants and 8.9% of the nonparticipants reported “hospital”; 1.3% of the participants and 0% of the nonparticipants reported “other” practice types.

Table 8. Case #4; Question #1: Which of the following would be the most appropriate recommendation?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase fluoxetine</td>
<td>3.5%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Continue fluoxetine and add lithium</td>
<td>12.9%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Continue fluoxetine and add quetiapine</td>
<td>16.5%</td>
<td>23.6%</td>
</tr>
<tr>
<td>Discontinue fluoxetine and begin lamotrigine*</td>
<td>62.4%</td>
<td>52.7%</td>
</tr>
<tr>
<td>Discontinue fluoxetine and begin valproate*</td>
<td>4.7%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.

Table 9. Case #4; Question #2: Given the patient’s weight concerns, which of the following atypical antipsychotics would you recommend?

<table>
<thead>
<tr>
<th>Possible recommendations (select only one)</th>
<th>Participants (n = 85)</th>
<th>Nonparticipants (n = 56)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olanzapine</td>
<td>14.6%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Clozapine</td>
<td>13.4%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Quetiapine*</td>
<td>28.8%</td>
<td>42.3%</td>
</tr>
<tr>
<td>Aripiprazole*</td>
<td>30.5%</td>
<td>21.2%</td>
</tr>
<tr>
<td>Risperidone</td>
<td>13.4%</td>
<td>13.5%</td>
</tr>
</tbody>
</table>

*Evidence-based choice.
reported “academic”; 1.3% of the participants and 0% of the nonparticipants reported “nonpracticing”; and 21.1% of the participants and 2.2% of the nonparticipants reported “other.”

vii: Where do you practice?
A total of 27.0% of the participants and 13.0% of the nonparticipants reported “urban”; 48.6% of the participants and 54.3% of the nonparticipants reported “suburban”; and 24.3% of the participants and 32.6% of the nonparticipants reported “rural.”

viii: What is your degree?
A total of 84.7% of the participants and 77.8% of the nonparticipants reported “MD”; 11.8% of the participants and 18.5% of the nonparticipants reported “DO”; 1.2% of the participants and 0% of the nonparticipants reported “other”; and 2.4% of the participants and 3.7% of the nonparticipants reported “NP/PA” (nonphysician/physician assistant).

DISCUSSION AND RECOMMENDATIONS FOR FURTHER STUDY
Overall, participants answered 7 of the 9 case vignette questions correctly and in higher proportions than the nonparticipants. By chance, this would have occurred only 7% of the time. This finding suggests that the newsletter had a positive impact on participant ability to make clinical decisions consistent with evidence-based recommendations covered by the program; participants did better than a similar group of physicians who had not been exposed to the program.

Future studies with larger sample sizes and sufficient power are needed to corroborate these findings and to allow for examination of individual items. In addition, a further follow-up with the study participants after an additional 4 months would have given further insight into retention of knowledge and changes in behavior.

Overall, family practice physician confidence reported for managing bipolar depression was not high, indicating a continued need for education especially in the area of “distinguishing bipolar disorder from depression,” which was cited by the respondents as a major barrier to the optimal management of bipolar disorder. “Patient adherence” was also cited by both groups as a barrier. This barrier might be more replicable in future studies of the efficacy of CME offerings regarding evidence-based treatment of other disorders.

The original purpose of this study (the reason it was commissioned) was to determine the efficacy of the enduring materials published in a journal format. The authors of this report, however, feel the compelling reasons for the publication of this study are to report those findings and also to highlight the case-vignette method for determining long-term retention and confidence levels of family physicians participating in the study.

With the emphasis on verification of outcomes (as to the impact on physicians practice attributable to an enduring material), the positive results of this relatively small study should encourage other CME providers of enduring materials to use case vignettes in their outcomes survey tools—especially when it is not feasible to carry out follow-up observations of physicians’ practice behaviors.

ACKNOWLEDGMENTS
Sponsored jointly by the University of Cincinnati College of Medicine and Avalon Clinical Communications, LLC, December 2008.

REFERENCES