A symposium entitled “Challenges in the Management of Psychosis and Alzheimer’s Disease” was held at the 2003 Annual Meeting of the American Association for Geriatric Psychiatry on March 2 in Honolulu, HI. Presenters discussed the treatment of behavioral disturbances in dementia, especially psychosis, and reviewed behavioral management, atypical antipsychotics, and other important therapeutic considerations.

**CME CERTIFIED**

**Educational Objectives**

- Discuss the importance of the mechanism of action for the management of psychotic disorders.

- Describe strategies to integrate psychosocial and pharmacologic interventions for patients with Alzheimer’s disease.

- Debate the effective management of behavioral disturbances and psychosis in Alzheimer’s disease.

- Identify barriers to optimizing the pharmacotherapeutic management of Alzheimer’s disease.

- Describe the latest clinical trials examining the safety and tolerability of antipsychotic agents in Alzheimer’s disease.
Mechanism of Action of Antipsychotic Drugs and Their Role in the Management of Psychotic Disorders

Jacobo E. Mintzer, MD, Professor of Psychiatry and Neurology, Director of Geriatric Psychiatry Program and Fellowship, Director of the Institute for Research Minority Training on Mental Health and Aging, Co-Director of Alzheimer’s Research and Clinical Programs, and Associate Director for Alzheimer’s Research Neuroscience Institute, Medical University of South Carolina, Charleston, discussed how current thinking about psychosis in Alzheimer’s disease has evolved and what is now understood. Because there is a lack of final evidence to justify the mechanism of action of psychosis in Alzheimer’s disease, much of the information presented by Dr. Mintzer derives from work in other types of psychosis such as schizophrenia.

Dementia is associated with multiple brain and neurochemical deficits that lead to psychiatric syndromes such as psychosis, depression, agitation, and altered sleep patterns. The first study of the effective treatment of psychosis in dementia was conducted by Devanand et al.1 This randomized, placebo-controlled trial found that standard doses of haloperidol were superior to low doses and placebo in treating psychosis and disruptive behaviors. However, some patients taking standard doses experienced moderate-to-severe extrapyramidal symptoms (EPS) such as tremor.

A study by Kapur and colleagues2 examined the relationship between dopamine occupancy, clinical response, and side effects in patients randomly assigned to various doses of haloperidol. A minimal amount of 68% receptor occupancy or blockage was needed to begin generating meaningful clinical responses. A degree of receptor occupancy, about 78%, predicted clinical EPS. Therefore, medications like haloperidol have a very narrow therapeutic window.

In contrast, the new atypical antipsychotics, with their added effects on the serotonin (5-HT) system, allow a decrease in the blockage required to achieve a therapeutic effect, thus making the therapeutic window larger. Atypical antipsychotics also seem to have a positive effect on aggression due to their effects on the serotonin system.

Alterations in the serotonin system are related to aggression. Low concentrations of the serotonin metabolite 5-hydroxyindoleacetic acid (5-HIAA) are associated with suicidal tendencies and violent behavior in patients with depression.3 Coccaro et al4 found reduced serotonergic function to be associated with impulsive aggression in patients with personality disorder.

“There is also evidence that there is a clear deficit in serotonin receptors in Alzheimer’s disease,” said Dr. Mintzer. Other studies showed that there are reductions in homovanillic acid and 5-HIAA in the cerebrospinal fluid of patients with dementia.5,6

Dr. Mintzer and associates7 explored the possible association between serotonin deficits and agitation in Alzheimer’s disease using the prolactin response to d,l-fenfluramine administration as a probe for serotonin activity. “There was a significant correlation between the presence of aggression and alteration in the serotonin system, regardless of equalizing for differences in the environment and cognitive impairments,” Dr. Mintzer explained.

Kapur et al8 conducted a study demonstrating the ability of the atypical antipsychotic drug olanzapine to block the serotonin system. Olanzapine induced near saturation of the serotonin receptors even at the lowest dose of 5 mg per day; its dopamine occupancy increased with dose. Doses of 30 mg per day or higher were associated with over 80% dopamine receptor occupancy and were more likely to induce extrapyramidal effects.

The atypical antipsychotic quetiapine has not demonstrated the dose-related increases in EPS that are expected with other drugs in this class. Kapur and colleagues9 examined the effect of quetiapine on
the brain by randomizing patients to various doses of quetiapine and measuring dopamine type 2 (D₂) and serotonin type 2a (5-HT₂a) occupancy. Quetiapine was found to be clinically effective and improved the EPS noted at baseline. This drug showed transiently high D₂ occupancy, which decreased to very low levels by the end of the dosing interval. The low D₂ occupancy of quetiapine may explain its freedom from EPS. Transient D₂ occupancy may be sufficient for the antipsychotic effect of quetiapine.

While neurochemical manipulation, such as blockage of the dopamine receptor, may be helpful in one area of the brain, it may not be useful in another area and may cause movement disorders or EPS. Possibly, the ideal compound would increase dopamine activity in some areas of the brain where necessary and decrease dopamine activity in other areas. One new compound, aripiprazole, a dopamine partial agonist, appears to do just that. In animal models of dopaminergic hyperactivity, aripiprazole appeared to inhibit the actions of dopamine agonists. In animal models of dopaminergic hyperactivity, aripiprazole appeared to increase the activity of dopamine.

Burris et al examined the interactions of aripiprazole with a single population of human D₂ receptors to further clarify its pharmacologic properties. In the preparation with little or no dopamine, the addition of aripiprazole actually increased the activity of dopamine. In contrast, the addition of haloperidol resulted in no activity since haloperidol always blocks the dopamine receptors. Investigators found that in a preparation rich in dopamine, the addition of aripiprazole decreased dopamine activity, but not to the extent seen with haloperidol. Instead, aripiprazole decreased dopamine activity to almost the same level as it would increase dopamine activity if it were working in an environment with little or no dopamine (Figure).

In summary, the specific pharmacologic activity of antipsychotics and other compounds in the treatment of psychosis and other associated symptoms in Alzheimer’s disease is unknown. Available compounds appear to have a different type of activity in neurochemical systems that could be associated with psychosis and other associated symptoms in Alzheimer’s disease. The clinical relevance of this difference needs to be further explored.

References
1. Devanand DP, Marder K, Michaels KS, et al. A randomized, placebo-controlled dose-comparison trial of haloperidol for psychosis and dis-


**Effective Management of Patients With Dementia and Psychotic Symptoms: Unanswered Questions**

Joel E. Streim, MD, Associate Professor of Psychiatry, and Director, Geriatric Psychiatry Fellowship, Hospital of the University of Pennsylvania, Philadelphia VA Medical Center, PA, said pharmacologic treatment of psychotic symptoms has evolved considerably over the last century. Dr. Streim reviewed the efficacy of antipsychotic treatment for both psychosis and agitation in patients with dementia, and discussed new findings from an outpatient study on aripiprazole.

---

### Antipsychotic Treatment for Psychosis and Agitation in Patients With Dementia

Fifteen years ago, Sunderland et al reviewed all the available placebo-controlled trials on antipsychotic treatment of psychosis and agitation in patients with dementia. Of the 10 trials reviewed, only five showed improvement in agitation, hyperactivity, hallucinations, and hostility, generally using low doses of antipsychotics in patients with dementia. In 1990, Schneider et al reviewed all the available placebo-controlled, double-blind studies on antipsychotic treatment and found neuroleptics to be significantly more effective than placebo. However, these researchers also noted high placebo response rates and modest effects in most studies. None of the studies showed real improvement in function with treatment, and safety and tolerability concerns were present.

More recently, Devanand et al randomized 71 patients with dementia and disruptive behaviors to either placebo, low-dose haloperidol (0.5-0.75 mg/day), or geriatric standard-dose haloperidol (2-3 mg/day). Low doses did not result in a treatment effect. There was significant improvement in the Brief Psychiatric Rating Scale (BPRS) at standard doses compared to placebo; however, 20% of patients on haloperidol 2-3 mg/day developed moderate-to-severe extrapyramidal side effects.

Second-generation (atypical) antipsychotics are being studied for their efficacy, as well as for their potential to reduce the risk of EPS, falls, and functional impairment. Katz et al conducted a 12-week, randomized, double-blind comparison of risperidone (0.5, 1, or 2 mg daily) and placebo for the treatment of psychosis and behavioral disturbances in 625 nursing home patients with Alzheimer’s disease or vascular dementia. Risperidone at 1 mg and 2 mg was superior to placebo in reducing Behavioral Pathol-
ogy in Alzheimer’s Disease (BEHAVE-AD) aggression scores. Adverse events such as EPS were especially prevalent with the 2-mg dose. Optimal dosing was determined to be 1 mg. Likewise, Jeste and colleagues found that the average optimal dose of risperidone in elderly dementia patients is 0.75 to 1.5 mg per day.

Katz et al also examined the incidence of falls in ambulatory patients given various doses of risperidone or placebo. Patients who received the 1-mg dose experienced significantly fewer falls than both the 2-mg–treated group and the placebo-treated group. This suggests that the 1-mg dose of risperidone may have a treatment effect on falls. To test this hypothesis, researchers examined wandering behavior (commonly found in agitated patients) as a marker for risk of falls. The likelihood of wandering was significantly reduced in patients taking the 1-mg dose of risperidone, which suggests that the effect on falls might be mediated by treating the agitation of wandering.

Street et al conducted a prospective, 6-week, multicenter, double-blind, placebo-controlled trial of the effects of various doses of olanzapine on psychotic and behavioral symptoms in 206 nursing home patients with Alzheimer’s disease. Low doses of olanzapine (5 and 10 mg/day) were generally well tolerated, with 5 mg significantly superior to placebo in treating agitation, aggression, and psychosis.

In another prospective, 10-week, double-blind, multicenter study, 284 patients with Alzheimer’s disease were randomized to flexible-dose quetiapine, flexible-dose haloperidol, or placebo. Both quetiapine and haloperidol demonstrated improvements in the BPRS agitation subscale compared to placebo. Functional assessments conducted using the Multidimensional Observational Scale for Elderly Subjects (MOSES), and the Physical and Self-Maintenance Scale (PSMS) showed significant worsening of functioning in the haloperidol group compared to the quetiapine group. Therefore, in patients with dementia, drugs like quetiapine may offer the advantage of preserved functioning, which is an important consideration in patients who are already quite disabled. This study also reported a statistically nonsignificant trend toward more falls and fractures with haloperidol and placebo. “Reduced fall rates may be a measure of treatment benefit, reflecting efficacy, not just safety, with some of these newer drugs,” said Dr. Streim.

**New Findings on the Atypical Antipsychotic Aripiprazole**

Three 10-week, placebo-controlled trials of aripiprazole for the treatment of psychosis in Alzheimer’s disease are either underway or have been recently completed. One recently completed outpatient study conducted on 208 patients in 29 centers around Europe and Israel had a flexible dose design, with doses ranging from 2-15 mg per day of aripiprazole. Patients in the sample were between 56 and 99 years of age, with *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* (DSM-IV) diagnoses of Alzheimer’s disease and Mini-Mental State Examination (MMSE) scores ranging between 6 and 24 (mean = 13.6). For inclusion in this study, patients were required to have a Neuropsychiatric Inventory-Nursing Home version (NPI-NH) score of at least 6 on either the delusion or hallucination item at the beginning of the study.

The primary efficacy measure was the NPI-psychosis subscale, a caregiver-rated scale that focuses on hallucinations and delusions. The BPRS psychosis subscale, a clinician-rated scale that examines hallucinatory behavior and unusual thought content, was another outcome measure used. On the NPI-psychosis scale, the mean change from baseline showed
Top 10 Unanswered Questions on Efficacy of Antipsychotic Treatments

1. What are the relative treatment benefits of pharmacologic and nonpharmacologic interventions? Studies of combined treatment with caregiver support and medication are needed.


3. What drug combinations might be useful in managing psychosis in Alzheimer’s disease (e.g., there are some data to suggest that cholinesterase inhibitors may have beneficial effects on psychotic symptoms and behaviors)?

4. How do newer antipsychotics compare in efficacy for the treatment of psychosis and agitation in dementia? How effective are they in usual clinical settings?

5. What is the optimal duration of treatment (e.g., when should antipsychotics be stopped when treating a patient with a progressive degenerative dementia)?

6. How durable are the remissions of psychosis in Alzheimer’s disease?

7. What is a reasonable titration schedule, especially for some of the newer drugs?

8. What are the optimal doses of the newer antipsychotic drugs such as quetiapine, ziprasidone, and aripiprazole?

9. When is agitation in the absence of psychosis an appropriate target for treatment?

10. What is the appropriate threshold for starting drug treatment of psychosis and agitation in dementia?

A nonsignificant improvement trend for the treatment group compared to placebo at weeks 6 and 10. There was a high placebo response rate. There was a statistically significant advantage of aripiprazole over placebo at week 10, as measured by mean change in BPRS core measures (conceptual disorganization, suspiciousness, hallucinatory behavior, and unusual thoughts). This advantage was also seen in the BPRS psychosis subscale. Discontinuation and adverse event rates were comparable between the aripiprazole and placebo groups. Dr. Streim explained that there are a number of questions that remain unanswered from the efficacy studies that have been conducted so far (see sidebar), and more research is greatly needed.

References


OVERCOMING BARRIERS IN THE MANAGEMENT OF NEUROPSYCHIATRIC SYMPTOMS OF DEMENTIA

J. Michael Ryan, MD, Assistant Professor of Psychiatry, University of Rochester Medical Center Program in Neurobehavioral Therapeutics, and Director of Psychiatric Consultation Services, Monroe Community Hospital, Rochester, NY, explained that two of the main barriers to managing complicated patients with dementia are medication safety and tolerability. Dr. Ryan discussed these barriers and presented safety and tolerability data from various published trials, including the new aripiprazole study in outpatients with Alzheimer’s disease.

In our practice, we hope that many of our drugs are effective, but in our frail, elderly patients with dementia, medication tolerability often drives our choice,” Dr. Ryan said. Patients require medications that are well tolerated and that minimize cardiovascular and metabolic complications that may increase morbidity and mortality.

Certain medication side effects such as akinesia, weight gain, anticholinergic effects, sexual problems, muscle rigidity, and akathisia have been shown to cause patients great distress. Therefore, there is a need to expand the spectrum of what is considered an adverse event.

Elderly patients are at higher risk for EPS and tardive dyskinesia. Alzheimer’s disease and other dementias are hypocholinergic states, and therefore patients with these conditions are more sensitive to anticholinergic effects. More than 80% of such patients also have more than one comorbid medical illness. There are a number of age-related changes in drug metabolism, and polypharmacy is a major concern.

Adverse effects associated with antipsychotic medication in older adults can present as a variety of mental and physical symptoms. Extrapiramidal symptoms and tardive dyskinesia are associated with incoordination, feeding problems, disfigurement, social isolation, falls, and fractures. Sedation causes impairment in carrying out activities of daily living (ADLs). Postural hypotension may predispose to falls and fractures. Anticholinergic effects lead to confusion, memory impairment, blurred vision, urinary retention, constipation, and dry mouth.

It is often difficult to determine whether a medication is causing an adverse effect or if there is a new symptomatic event occurring in the patient. Sometimes if an adverse effect is interpreted as a new event, additional medications will be added, which may then produce more unintended adverse effects. This is known as the “prescribing cascade.” It is important to choose medications and dose them in a way that avoids these confusing situations.

At low doses, conventional or typical antipsychotic drugs, such as haloperidol, thioridazine, fluphenazine, loxapine, and perphenazine, can have modest efficacy. However, the risk of tardive dyskinesia and other side effects significantly hinders treatment with this class of drug. Kane et al found that the use of conventional antipsychotics plays a substantial role in the development of tardive dyskinesia. Jeste and associates discovered that longer treatment duration and greater cumulative amounts of conventional antipsychotics were associated with higher risk of tardive dyskinesia. Other risk factors were history of alcohol abuse and presence of subtle movement disorder at baseline. Woerner et al concluded that tardive dyskinesia rates were age-related.

Side effects associated with conventional antipsychotics in the treatment of older patients have led to a shift toward the use of another class of drug, the atypical antipsychotics. In a prospective longitudinal study comparing the 9-month cumulative inci-
dence of tardive dyskinesia with haloperidol to that with the atypical antipsychotic risperidone in 122 older outpatients, risperidone was found to be significantly less likely to result in tardive dyskinesia than haloperidol over the study period.6

Katz and colleagues7 conducted the first large double-blind, placebo-controlled study of the efficacy and safety of risperidone in the treatment of psychotic and behavioral symptoms in 625 institutionalized elderly patients with dementia. Patients were randomly assigned to 0.5, 1, or 2 mg per day of risperidone, or placebo, for 12 weeks. Adverse events were dose-related and included EPS, somnolence, and mild peripheral edema. With the 2-mg dose, the liability for EPS appeared to begin to exceed the efficacy benefits.

Another study compared the effects of flexible-dose risperidone, flexible-dose haloperidol, and placebo on aggression and other behavioral symptoms in patients with dementia.8 Severity of EPS with risperidone did not differ significantly from placebo and was less than that with haloperidol.

Olanzapine was studied in a double-blind, randomized, 6-week, placebo-controlled trial by Street et al9 to determine the drug’s effect on psychotic and behavioral symptoms in 206 nursing home patients with Alzheimer’s disease. Somnolence was significantly more common among patients receiving olanzapine, as was gait disturbance. However, no significant cognitive impairments or increases in extrapyramidal or central anticholinergic effects were found at any olanzapine doses compared to placebo.

Tariot and associates10 assessed the long-term tolerability, safety, and clinical benefit of open-label quetiapine in 184 elderly patients with psychosis. Fifteen percent of the patients withdrew from the 52-week study because of adverse events or intercurrent illness. Somnolence (31%), dizziness (17%), and postural hypotension (15%) were common adverse events but rarely resulted in study withdrawal. Extrapyramidal symptoms occurred in only 13% of patients. Incidence of orthostasis appeared early in the course of treatment and decreased over time. Quetiapine appeared to have no cardiovascular adverse outcomes.

In another study, Tariot et al11 randomized 298 nursing home patients to flexible doses of either quetiapine, haloperidol, or placebo. The incidence of somnolence was greater in the haloperidol group than the quetiapine group, and both treatment groups had higher rates of somnolence than did the placebo group. There was little difference between the three groups in terms of incidence of falls, vomiting, postural hypotension, weight gain, fractures, abnormal gait, EPS, hypertonia, tremor, or cogwheel rigidity. Quetiapine appeared to be well tolerated.

In general, the primary advantages of atypical antipsychotic drugs include low incidence of EPS and tardive dyskinesia. Furthermore, most of these drugs are prolactin-sparing and can show advantages in some refractory patients. The limitations of atypical antipsychotics include possible metabolic side effects (such as weight gain and dyslipidemia), EPS when

### Table 1: Atypical Antipsychotics: Advantages and Limitations

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low EPS and TD liability</td>
<td>Metabolic side effects with some (eg, weight, diabetes, dyslipidemias)</td>
</tr>
<tr>
<td>Prolactin-sparing with most drugs</td>
<td>EPS liability with some drugs at high doses</td>
</tr>
<tr>
<td>Advantages in some refractory patients</td>
<td>Somnolence</td>
</tr>
<tr>
<td></td>
<td>Inadequate response in many patients</td>
</tr>
</tbody>
</table>

EPS = extrapyramidal symptoms; TD = tardive dyskinesia.
higher doses are used, somnolence, and inadequate response in many patients (Table I).

Certain atypical antipsychotics have been associated with the development of diabetes, which increases the risk of cardiovascular disease and may cause macrovascular and microvascular effects (such as blindness, kidney failure, and peripheral neuropathy). In a retrospective study utilizing a large database in the United Kingdom, Koro et al. assessed the independent effects of olanzapine and risperidone on the risk of diabetes among patients with schizophrenia. When compared to nonusers of antipsychotics and those taking conventional antipsychotics, patients taking olanzapine had a significantly increased risk of developing diabetes, yet patients taking risperidone did not.

Some atypical antipsychotics have the potential to increase serum low-density lipoprotein (LDL) cholesterol and triglyceride levels. Wirshing et al. retrospectively reviewed the charts of 590 patients, of which 215 had adequate laboratory data for inclusion in a study on the effects of certain antipsychotics (clozapine, olanzapine, risperidone, quetiapine, haloperidol, and fluphenazine) on glucose and lipid levels. Patients treated with clozapine, olanzapine, and haloperidol had increased glucose levels compared to baseline. Those receiving clozapine and olanzapine had statistically significant increases in triglyceride levels compared with the other groups. Extreme elevations in triglycerides without associated elevations in total cholesterol have been reported for clozapine, olanzapine and quetiapine. Koro et al. found olanzapine to be associated with a fivefold increase in the risk of developing hyperlipidemia compared to patients with no antipsychotic exposure, and a threefold increased risk compared to those taking conventional antipsychotics. However, risperidone was not associated with increased hyperlipidemia risk compared to patients taking conventional or no antipsychotics.

Finally, a recently completed trial of aripiprazole in outpatients with Alzheimer’s disease revealed the following spontaneously-reported adverse events to be most common: somnolence, accidental injury (not connected with somnolence or lightheadedness), urinary tract infection, bronchitis, increased salivation, depression, and hypertension (Table II). None of the events occurred in greater than 10% of patients. Patients taking aripiprazole had a similar incidence of EPS compared to placebo. In addition, aripiprazole was associated with minor increases in body weight and no significant change in median total cholesterol level.

Ongoing and future clinical studies expect to answer further questions about the tolerability (and efficacy) of atypical antipsychotics in the treatment of psychosis in patients with Alzheimer’s disease. For example, the Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE) will be evaluating the effectiveness of antipsychotic medications for schizophrenia and Alzheimer’s disease in broad patient populations and “real world” settings.

References
This activity was developed for primary care physicians and geriatric psychiatrists.

**Accreditation**
- The American Association for Geriatric Psychiatry (AAGP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.
- AAGP designates this continuing medical education activity for one credit hour in Category 1 of the Physician’s Recognition Award of the American Medical Association. Each physician should claim only those hours of credit he/she actually spent on the educational activity.
- This CME activity was planned and produced in accordance with the ACCME Essentials.
- Based upon trials, the estimated time to complete this program is 1 hour.

**Instructions**
A certificate of completion will be awarded to physicians completing the posttest and evaluation form. Please complete the posttest and program evaluation on the following page and mail to:

American Association for Geriatric Psychiatry
7910 Woodmont Ave
Suite 1050
Bethesda, MD 20814-3004

Please allow three weeks for processing. Program expiration date is June 2004. Please phone (301) 654-7850 or fax (301) 654-4137 with any questions.

**Educational Objectives**
- Discuss the importance of the mechanism of action for the management of psychotic disorders.
- Describe strategies to integrate psychosocial and pharmacologic interventions for patients with Alzheimer’s disease.
- Debate the effective management of behavioral disturbances and psychosis in Alzheimer’s disease.
- Identify barriers to optimizing the pharmacotherapeutic management of Alzheimer’s disease.
- Describe the latest clinical trials examining the safety and tolerability of antipsychotic agents in Alzheimer’s disease.

---

CME Examination & Instructions

Challenges in the Management of Psychosis and Alzheimer’s Disease

1. There is no significant correlation between the presence of aggression and alteration in the serotonin system.
   a. True  b. False

2. There is a clear deficit in serotonin receptors in Alzheimer’s disease.
   a. True  b. False

3. Which of the following antipsychotics does not demonstrate dose-related increases in extrapyramidal symptoms?
   a. Olanzapine
   b. Haloperidol
   c. Quetiapine

4. In dopamine-rich environments, aripiprazole decreases dopamine activity to a greater extent than does haloperidol.
   a. True  b. False

5. In the Katz study, the 1-mg daily dose of risperidone was associated with significantly fewer falls than:
   a. The group treated with 2 mg daily
   b. The placebo group
   c. Both a and b
   d. Neither group

6. In patients with dementia, quetiapine does not offer the advantage of preserved functioning.
   a. True  b. False

7. Aripiprazole has been shown to have a statistically significant advantage over placebo on both the BPRS core measures scale and BPRS psychosis subscale.
   a. True  b. False

8. The main barrier to managing complicated patients with medication is:
   a. Efficacy
   b. Tolerability/safety
   c. Cost

9. The risk of tardive dyskinesia and other side effects significantly hinders treatment with conventional antipsychotics.
   a. True  b. False

10. Some atypical antipsychotics tend to increase blood glucose levels, such as:
    a. Aripiprazole
    b. Risperidone
    c. Clozapine
    d. All of the above
    e. None of the above

CME Evaluation

Please circle the number that best reflects your opinions on the following statements, using the following rating scale:
1 = Strongly Agree; 2 = Agree; 3 = Disagree; 4 = Strongly Disagree.

1. The program objectives were met. 1  2  3  4
2. The program content was useful. 1  2  3  4
3. The program content was relevant. 1  2  3  4
4. The program was educational. 1  2  3  4
5. The program was not promotional. 1  2  3  4

Additional Comments: ____________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

Certificates will be mailed to the address listed below. Please allow three weeks for processing.

Participant Information (Please Print):
Name: ___________________________________________ Degree: ____________________________
Title: ______________________________________________________________________________
Specialty: __________________________________________________________________________
Institution: __________________________________________________________________________
Street: ______________________________________________________________________________
City: __________________________________________ State: __________________ Zip code: _________
Telephone: ____________________________________________________________________________
Signature: ____________________________________________________________________________

I certify that I have completed this activity as designed.
The American Association for Geriatric Psychiatry requires that the authors participating in a continuing medical education activity disclose to participants any significant financial interest or other relationship (1) with the manufacturers of any commercial service discussed in an educational presentation, and (2) with any commercial supporters of the activity.

Dr. Mintzer reported that he has received grant/research support from Abbott Laboratories, Alzheimer’s Disease Cooperative Study, AstraZeneca, Bristol-Myers Squibb Company, Eisai America, Inc., Forest Pharmaceuticals, Inc., Janssen Research Foundation, Lilly Research Laboratories, National Institute on Aging, and Novartis. He has served as a consultant and/or on the speakers’ bureau for Abbott, AstraZeneca, Aventis, Bristol-Myers Squibb, Capital Research Company, Eli Lilly, Forest Laboratories, Janssen Research Foundation, Novartis, Targaset, The Council of Healthcare Advisors, UCB Pharma, Eisai America, and Pfizer, Inc. He has also served as a board member, trustee, or public spokesperson for Alzheimer’s Association, AAGP, APA, and International Psychogeriatric Association.

Dr. Streim reported that he has received grant/research support from Bristol-Myers Squibb Company and Janssen Pharmaceutica.

Dr. Ryan reported that he has received grant/research support from Janssen Research Foundation, National Institute of Mental Health, and the National Institute on Aging. He has served as a consultant for AstraZeneca, Bristol-Myers Squibb, and Novartis, and has served on the speakers’ bureau for Abbott Laboratories, Janssen Research Foundation, and Pfizer/Eisai.

This special report was sponsored by the American Association for Geriatric Psychiatry and produced by MultiMedia HealthCare/Freedom, LLC, under an unrestricted educational grant from Bristol-Myers Squibb Company. The views expressed in this publication are not necessarily those of Bristol-Myers Squibb Company or the publishers. This publication may not be reproduced in whole or in part without the express written permission of MultiMedia HealthCare/Freedom, LLC.

Copyright © 2003 MultiMedia HealthCare/Freedom, LLC.
All rights reserved. Office Center at Princeton Meadows, Building 400, Plainsboro, NJ 08536. Telephone: (609) 275-3800.
Printed in USA.

RETD-03021