

Alone in the Home

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CME BACKGROUND

Original material is selected for credit designation based on an assessment of the educational needs of CME participants, with the purpose of providing readers with a curriculum of CME activities on a variety of topics from volume to volume. This special series of case reports about dementia was deemed valuable for educational purposes by the Publisher, Editor in Chief, and CME Institute Staff. Activities are planned using a process that links identified needs with desired results.

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CME OBJECTIVE

After studying this case, you should be able to:

• Evaluate and treat an elderly outpatient with gradual short-term memory loss, anomia, weight loss, and symptoms of psychosis

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FINANCIAL DISCLOSURE

All individuals in a position to influence the content of this activity were asked to complete a statement regarding all relevant personal financial relationships between themselves or their spouse/partner and any commercial interest. The CME Institute has resolved any conflicts of interest that were identified. In the past year, Larry Culpepper, MD, MPH, Editor in Chief, has been a consultant for AstraZeneca, Pfizer, Takeda, and Trovis; and has been a member of the speakers/advisory boards for Forest and Merck. No member of the CME Institute staff reported any relevant personal financial relationships. **Faculty financial disclosure**

appears at the end of the article.

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HISTORY OF PRESENT ILLNESS

Ms A, an 85-year-old woman with a history of hypothyroidism, presented for a new patient evaluation at the Banner Alzheimer's Institute with her daughter, who provided the clinical history. Two years ago, Ms A was observed to have an insidious onset and gradual progression of short-term memory difficulties with mild anomia that gradually worsened over time. She was having difficulty with orientation to date, tracking appointments, and recalling details of recent events and conversations. Additionally, Ms A developed delusions and visual hallucinations. For example, she had accused her daughter of not inviting her to a party that never existed. Ms A also started to complain of seeing a young man in her room, who would disappear under her bed. Ms A was living alone and began to lose weight about 1 year ago.

Several months ago, Ms A suffered from significant fatigue and refused to get out of bed for many days. Her daughter called the paramedics, and Ms A was hospitalized. It was discovered that Ms A had stopped taking her medications including levothyroxine. Once levothyroxine was restarted, she returned to baseline within days. Ms A was discharged to her home, and her daughter started to help manage her medications. Ms A's daughter set up Meals on Wheels for her, and there was some improvement in Ms A's weight. Ms A refused a home caregiver. She stopped paying her bills 6 months ago, and her daughter took over the finances.

Soon thereafter, Ms A began believing that somebody had replaced her gun with an exact replica. She called the police and gave the gun to them. She began to believe that her grandson, the grandson's girlfriend, and their daughter were living on the roof of her house. Her psychosis, although mildly irritating, did not result in significant agitation or anxiety.

Currently, Ms A is significantly forgetful, misplaces items, has word-finding difficulty, and is disoriented. She cannot use appliances. She confuses her daughter with her sister and her mother. She is described as depressed and apathetic and is agitated and irritable. Her time is spent watching TV and caring for her dog. She sleeps much of the day and has diminished interests. Ms A has no feelings of guilt or hopelessness and has no suicidal ideation.

PAST MEDICAL HISTORY

Ms A is treated for hypertension and hypothyroidism. She had a hysterectomy in the past.

CLINICAL POINTS

- People with dementia who live alone are at high risk for malnutrition, premature loss of instrumental activities of daily life function, misuse of medications, social isolation, and financial mismanagement.
- The Live Alone Assessment can be used to help identify whether it is safe for a patient with dementia to continue to live alone.
- Moving cognitively impaired people who live alone in with family or into an institution can result in decreased psychosis, increased function, more activities, and better nutrition.

MEDICATIONS

Ms A is prescribed levothyroxine and lisinopril but takes them irregularly despite current assistance from her daughter.

ALLERGIES

Ms A has no known drug allergies.

SOCIAL HISTORY

Ms A has 8 years of education and worked in sales management. She has been married and divorced 2 times and has 1 child. She currently lives alone, but her daughter is planning on moving Ms A to a mobile home nearby in the community where she resides. Ms A has no significant history of alcohol consumption, and she quit smoking cigarettes about 20 years ago after smoking an average of 1 pack per day for approximately 50 years.

FAMILY HISTORY

Ms A has 2 brothers and a sister. All 3 siblings have Alzheimer's disease.

PHYSICAL EXAMINATION

Ms A's vital signs include blood pressure: 110/60 mm Hg, pulse: 88 bpm, height: 63 in, and weight: 85.7 lb. Of note, Ms A's daughter states that the current weight is a 6-lb increase from the last time it was checked.

NEUROLOGIC EXAMINATION

The neurologic examination was unremarkable except for broken smooth pursuits and mild impairment in hearing bilaterally to finger rub. Deep tendon reflexes were attenuated but symmetric throughout. Ms A has diffuse muscle atrophy.

Smooth pursuit can be tested by asking the patient to track a small moving target at a distance of about 1 meter, while keeping the head stationary (Kennard, 2007). Both horizontal and vertical smooth pursuit should be assessed. The target should be moved at a slow uniform speed, and the pursuit eye movements are observed to determine whether they are smooth or broken up by catch-up saccades or a fast movement of the eye. Because smooth pursuit requires the coordination of many brain regions, it is a nonspecific finding but could be indicative of cerebral degeneration. Sudo et al (2010) reported that impaired smooth pursuit can be indicative of impaired intellectual and frontal lobe function and can be regarded as a primitive reflex (frontal release sign).

REFERENCES

Kennard C. How to do it: examine eye movements. Pract Neurol. 2007;7(5):326–330.

Sudo K, Mito Y, Tajima Y, et al. Smooth-pursuit eye movement: a convenient bedside indicator for evaluating frontal lobe and intellectual function. *In Vivo*. 2010;24(5):795–797.

Based on the clinical history alone, do you think a dementia is present?

A. Yes

- B. No
- C. Not enough information

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

Based on the clinical history alone, do you think a dementia is present?

А.	Yes	60%
В.	No	0%
C.	Not enough information	40%

Those who answered C (not enough information) stated that, in the context of medication noncompliance, the patient could have cognitive decline due to untreated hypothyroidism. Hypothyroidism in nondemented older adults is associated with impairments in learning, word fluency, visuospatial abilities, and some aspect of attention, visual scanning, and motor speed (Osterweil et al, 1992). Before presuming that a diagnosis of dementia is present, as the clinical history suggests, it was suggested to obtain a thyroid-stimulating hormone (TSH) level. Additionally, due to Ms A's weight loss and undernourishment, it was suggested to check her vitamin B_{12} level. Ms A was also in the hospital recently, and one could presume that her electrolyte levels were checked, so Figure 1. Ms A's Pentagon Drawing From the Mini-Mental State Examination



dehydration, hyponatremia, or other metabolic disturbances are most likely not contributing to a delirium, but without knowledge of her metabolic panel, electrolyte imbalance could be a consideration.

Those who answered A (yes) believed that the insidious onset and gradual progression of cognitive decline is consistent with a progressive neurodegenerative dementia. Although hypothyroidism could have exacerbated symptoms, when Ms A was hospitalized and resumed treatment for hypothyroidism, her cognitive status returned to her baseline level, which is impaired.

REFERENCE

Osterweil D, Syndulko K, Cohen SN, et al. Cognitive function in nondemented older adults with hypothyroidism. *J Am Geriatr Soc*. 1992;40(4):325–335.

Based on the information thus far, what would you expect the Mini-Mental State Examination (MMSE) score to be?

- A. 26-30
- B. 21-25
- C. 16-20
- D. 11-15
- E. 10 or below

A MMSE (Folstein et al, 1975) score generally correlates with disease severity. Scores ≤ 9 can indicate severe dementia, scores between 10–20 can indicate moderate dementia, and a score > 20 can indicate mild dementia (Mungas, 1991). MMSE scores vary by age and education. MMSE scores and age have an inverse relationship, with scores ranging from a median of 29 for people aged 18 to 24 years, to a median of 25 for individuals over the age of 80. MMSE scores and years of education have a direct relationship. Those with 0 to 4 years of education have a median MMSE score of 22, whereas those with at least 9 years of education have a median MMSE score of 29 (Crum et al, 1993). Figure 2. Ms A's Clock Drawing



REFERENCES

- Crum RM, Anthony JC, Bassett SS, et al. Population-based norms for the Mini-Mental State Examination by age and educational level. *JAMA*. 1993;269(18):2386–2391.
- Folstein MF, Folstein SE, McHugh PR. "Mini-mental state": a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12(3):189–198.
- Mungas D. In-office mental status testing: a practical guide. *Geriatrics*. 1991;46(7):54–58, 63, 66.

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

Based on the information thus far, what would you expect the MMSE score to be?

А.	26-30	10%
В.	21–25	40%
C.	16–20	40%
D.	11–15	10%
E.	10 or below	0%

Ms A scored 14 points on the MMSE. She missed 4 points on orientation, 5 points on attention, 1 point on comprehension, 3 points on recall, 2 points on language, and 1 point on visuospatial. Her intersecting pentagons are shown in Figure 1. On the basis of the response of those present at the conference, Ms A appears to be somewhat more impaired than expected given the clinical history. Often, when the informant does not live with the patient and does not see the patient on a regular basis, the clinical history may not reflect the true severity of the symptoms.

On the Category Retrieval test, Ms A listed 7 different animals with 1 repetition. The clock drawing was also impaired as shown in Figure 2. Other cognitive screening tests such as the Montreal Cognitive Assessment were not performed.

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LABORATORIES/RADIOLOGY

Ms A has recent complete blood cell count (CBC), comprehensive metabolic panel (CMP), and TSH results that are unremarkable.

Based on the information thus far, what tests, if any, should be ordered to complete the dementia workup?

- A. No further tests
- B. Vitamin B₁₂ level
- C. Structural brain scan (computed tomography [CT] or magnetic resonance imaging [MRI])
- D. B and C

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

Based on the information thus far, what tests, if any, should be ordered to complete the dementia workup?

А.	No further tests	10%
B.	Vitamin B ₁₂ level	0%
С.	Structural brain scan (CT or MRI)	0%
D.	B and C	90%

A community internist who was present at the case conference felt that further workup was neither necessary nor cost effective. He felt that further tests such as brain imaging would not change the management of Ms A and could lead to incidental findings, resulting in further unnecessary tests. It was counterargued that vitamin B₁₂ deficiency is common in the elderly (Pennypacker et al, 1992), and findings have shown patients with vitamin B₁₂ deficiency to have slightly lower cognitive performance than nondeficient subjects (Bernard et al, 1998). Thus, due to the ease (and relatively low cost) of measuring vitamin B₁₂ and replenishing low levels, measurement of vitamin B₁₂ is recommended as part of a dementia assessment. It was also counterargued that the head CT could assist in the differential diagnosis (help rule out neoplasm, hydrocephalus, subdural hematoma, or strokes), which could affect management of Ms A. One study found that 5% of patients had a clinically significant structural lesion but no features in the history or examination that would have predicted the lesions (Chui and Zhang, 1997).

Guidelines for a routine dementia workup include CBC, CMP, vitamin B_{12} , and TSH measures and structural brain imaging with either an MRI or CT (Knopman et al, 2001). In this case, the treating physician ordered a vitamin B_{12} level and a noncontrast head CT.

REFERENCES

- Bernard MA, Nakonezny PA, Kashner TM. The effect of vitamin B12 deficiency on older veterans and its relationship to health. *J Am Geriatr Soc.* 1998;46(10):1199–1206.
- Chui H, Zhang Q. Evaluation of dementia: a systematic study of the usefulness of the American Academy of Neurology's practice parameters. *Neurology*. 1997;49(4):925–935.
- Knopman DS, DeKosky ST, Cummings JL, et al; Report of the Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter: diagnosis of dementia (an evidence-based review). *Neurology*. 2001;56(9):1143–1153.

Pennypacker LC, Allen RH, Kelly JP, et al. High prevalence of cobalamin deficiency in elderly outpatients. J Am Geriatr Soc. 1992;40(12):1197–1204.

Based on the information thus far, what is the most likely diagnosis?

- A. Depressive psychosis
- B. Frontotemporal dementia
- C. Alzheimer's disease
- D. Lewy body dementia
- E. Vascular dementia

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

Based on the information thus far, what is the most likely diagnosis?

А.	Depressive psychosis	0%
B.	Frontotemporal dementia	0%
С.	Alzheimer's disease	80%
D.	Lewy body dementia	0%
E.	Vascular dementia	20%

THE TREATING PHYSICIAN'S IMPRESSION

Ms A is an 85-year-old woman who presents for a cognitive evaluation. The clinical history and cognitive findings are consistent with a dementia. The most likely etiology of Ms A's dementia is Alzheimer's disease. However, further testing will be initiated to rule out other potential etiologies such as intracranial pathology or vitamin B_{12} deficiency. Ms A's dementia has been complicated with delusions, visual hallucinations, and agitation. Furthermore, she has been living alone with failure to thrive and weight loss. The daughter is planning on moving Ms A to live close by with better supervision.

Figure 3. The Live Alone Assessment^a

The following conditions may indicate when a person with dementia is no longer safe to live alone or will require more services, assistance, or placement.			
	G	RADE	
A=Emergent Only <u>1 condition</u> needs to be present; immediate help or placement is required	A/B Emergent/Semiemergent	B = Semiemergent > 2 conditions indicate that there are safety concerns that must be addressed	C = Nonemergent > <u>3 conditions</u> are present; additional help will be beneficial; reevaluate monthly
	OBSERVED OR RE	PORTED CONDITIONS	1
 Weight loss of > 6 lb or 10% body weight in 6 months, evidence of protruding bones Presence of paranoia, hallucinations, delusions, aggression, or thoughts of suicide Threatens violence with/without weapons Evidence of caregiver injury/domestic violence Repeated emergency room visits, hospitalizations Evidence of substance abuse Frequent calls to police or emergency services Wandering outside the home No food/rancid food in the home Lack of safety with stove, power tools, yard Unable to take medications correctly Live stock/other animals receive inadequate care Eviction notice served 	 Malfunctioning plumbing Thermostats not set appropriately for weather conditions Chronic anxiety, panic attacks, worry, or depression is present Unsafe driving or refuses to stop driving Neighbors calling police 	 Not able to manage bowel/bladder care Repeated calls to family/ others asking what to do next Dirty/infested household Garbage accumulation Food stored inappropriately Taken advantage of by family, friends, neighbors Refuses personal care for prolonged period of time 	 Phone calls from community members advising help is needed Vegetative or socially isolated behavior (sitting all day with TV on or off) Missing belongings, hiding things Poor grooming, wearing the same clothing all the time, soiled appearance
Total A:	Total A/B's:	Total B:	Total C:
^a Adapted with permission from Hall et al, 2004.			

ON LIVING ALONE

An advanced practice nurse (G.R.H.), who is a member of the Banner Alzheimer's Institute Family and Community Services, stated that at this time Ms A would require environmental modification prior to initiation of psychoactive medications and that the Live Alone Assessment (Figure 3) could have been used to assess this patient. Given that Ms A has had significant weight loss and psychosis, her case would be regarded as "A = Emergent," and immediate help or placement is required. The advanced practice nurse also felt that the daughter's plan of moving Ms A into a separate home in the same mobile home community was not optimal, as Ms A requires 24/7 care. Furthermore, the daughter's plan could worsen confusion because Ms A would still be alone, but now in an unfamiliar environment.

Approximately 25%–33% of people with early dementia live alone (Lehmann et al, 2010). Evidence suggests that people with dementia who live alone are at high risk for malnutrition (Gillette-Guyonnet et al, 2003), premature loss of instrumental activities of daily life function, psychotic symptoms, social isolation, and risks to safety, especially from misused medications and financial mismanagement (Neufeld et al, 2004). These individuals are less physically active and have fewer day-to-day activities (Suzuki and Murase, 2010).

People with dementia who live alone have significantly more unmet home maintenance, psychological, social, medical, and personal care needs, resulting in accidental injury, self-neglect, and emotional distress and causing excessive disability. Due to diminished awareness of their condition and limitations, they are highly likely to refuse supportive social, activity, and nutritional services (Durand et al, 2009; Miranda-Castillo et al, 2010). Moreover, their cognitive decline is more likely to be overlooked by their primary care provider (Finkel, 2003; Wilkins et al, 2007). Moving cognitively impaired people who live alone in with family or into an institution with more structure will often result in a decline in psychosis, increased function, more activities, and better nutrition.

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REFERENCES

Durand M, James A, Ravishankar A, et al. Domiciliary and day care services: why do people with dementia refuse? *Aging Ment Health*. 2009;13(3):414–419.

- Finkel SI. Cognitive screening in the primary care setting: the role of physicians at the first point of entry. *Geriatrics*. 2003;58(6):43–44.
- Gillette-Guyonnet S, Nourhashemi F, Andrieu S, et al; REAL-FR Group. The REAL-FR research program on Alzheimer's disease and its management: methods and preliminary results. J Nutr Health Aging. 2003;7(2):91–96.
- Hall G, Bossen A, Specht J. Live Alone Assessment. Iowa City, Iowa: The University of Iowa College of Nursing, 2004.
- Lehmann SW, Black BS, Shore A, et al. Living alone with dementia: lack of awareness adds to functional and cognitive vulnerabilities. *Int Psychogeriatr.* 2010;22(5):778–784.
- Miranda-Castillo C, Woods B, Orrell M. People with dementia living alone: what are their needs and what kind of support are they receiving? *Int Psychogeriatr.* 2010;22(4):607–617.
- Neufeld SW, Lysack CL, Macneill SE, et al. Living arrangements decisions at discharge and later: differences in criteria and outcomes. *Home Health Care Serv Q.* 2004;23(4):29–47.
- Suzuki T, Murase S. Influence of outdoor activity and indoor activity on cognition decline: use of an infrared sensor to measure activity. *Telemed J E Health*. 2010;16(6):686–690.
- Wilkins CH, Wilkins KL, Meisel M, et al. Dementia undiagnosed in poor older adults with functional impairment. J Am Geriatr Soc. 2007;55(11):1771–1776.

If this patient had supervision regarding medication management, what medication, if any, should be started first?

- A. Atypical antipsychotic
- B. Cholinesterase inhibitor
- C. *N*-methyl-D-aspartate (NMDA) receptor antagonist (memantine)
- D. Selective serotonin reuptake inhibitor (SSRI)
- E. Tetracyclic antidepressant (specifically, mirtazapine)
- F. Short-acting benzodiazepine
- G. None at this time
- H. Aspirin

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

If this patient had supervision regarding medication management, what medication, if any, should be started first?

А.	Atypical antipsychotic	10%
B.	Cholinesterase inhibitor	50%
С.	NMDA receptor antagonist (memantine)	20%
D.	SSRI	0%
E.	Tetracyclic antidepressant	
	(specifically, mirtazapine)	10%
F.	Short-acting benzodiazepine	0%
G	None at this time	10%
H. Aspirin		0%

Many conference attendees opted for a cholinesterase inhibitor at this time, as Ms A quite likely has Alzheimer's disease and a cholinesterase inhibitor is indicated; however, some opted for memantine. In our collective experience at Banner Alzheimer's Institute, we have observed that memantine may have a greater likelihood than cholinesterase inhibitors in reducing psychosis and agitation, noting that no medication is approved by the US Food and Drug Administration (FDA) for the treatment of behavioral symptoms in dementia, and there are no clinical trial data guiding best practices in this situation. Data suggest that memantine may be beneficial in treating behavioral and psychological symptoms of dementia in some patients (Clerici et al, 2011; Wilcock et al, 2008; Winblad et al, 2007).

It was suggested to start memantine and a cholinesterase inhibitor at the same time, but most conference attendees opted for a more conservative approach of 1 medication change. Those who opted for memantine first felt that Ms A's weight should be improved and stabilized prior to starting a cholinesterase inhibitor, as possible side effects of cholinesterase inhibitors include anorexia, nausea, and weight loss among others (Farlow et al, 2008).

Most in attendance felt that an atypical antipsychotic for treatment of psychosis was not indicated, as the psychosis was nonagitating or threatening, again noting the lack of FDA approval for use of such medications, as well as warnings regarding use in the elderly (FDA Web site, 2008).

REFERENCES

- Clerici F, Vanacore N, Elia A, et al; The Memantine Lombardy Study Group. Memantine effects on behaviour in moderately severe to severe Alzheimer's disease: a post-marketing surveillance study. *Neurol Sci.* 2011.
- Farlow MR, Miller ML, Pejovic V. Treatment options in Alzheimer's disease: maximizing benefit, managing expectations. *Dement Geriatr Cogn Disord*. 2008;25(5):408–422.
- US Food and Drug Administration. Safety. Antipsychotics, conventional and atypical. Posted June 16, 2008. http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm110212. htm. Accessed January 12, 2012
- Wilcock GK, Ballard CG, Cooper JA, et al. Memantine for agitation/ aggression and psychosis in moderately severe to severe Alzheimer's disease: a pooled analysis of 3 studies. J Clin Psychiatry. 2008;69(3):341–348.
- Winblad B, Jones RW, Wirth Y, et al. Memantine in moderate to severe Alzheimer's disease: a meta-analysis of randomised clinical trials. *Dement Geriatr Cogn Disord*. 2007;24(1):20–27.

THE TREATING PHYSICIAN'S PLAN

- Order a noncontrast CT of the brain and vitamin B₁₂ level to complete the dementia workup.
- 2. Discuss the concerns related to patient safety and optimization of function with regard to living alone; 24/7 care is recommended as optimal at this time. Ms A's daughter is strongly encouraged to meet with a member of the Family and Community Services team.
- 3. Encourage increased caloric intake given Ms A's weight loss. Ms A's daughter notes that her mother has been regaining weight since food has been provided for her.

- 4. Initiate memantine once Ms A's medications are monitored daily. A starter pack will be provided as well as a prescription for 10 mg twice a day.
- 5. Consider initiation of a cholinesterase inhibitor in the future.
- 6. Monitor Ms A's visual hallucinations, delusions, and agitated behaviors. Use of an atypical antipsychotic may be necessary in the future. At this time, see if memantine improves any of these issues.
- 7. Refer Ms A's daughter to a Banner Alzheimer's Institute caregiver class as well as a support group. Again, Ms A's daughter is encouraged to meet 1-on-1 with a member of our Family and Community Services team.
- 8. The possibility of being involved in clinical research was briefly discussed with Ms A and her daughter, but they were not interested.
- 9. Ms A will follow up in approximately 2 months.

LABORATORY RESULTS

Ms Å's B_{12} level was normal. The head CT (Figure 4) was unremarkable except for a 7.5-mm hyperdense focal lesion at the level of the foramen magnum. The radiologist requested further evaluation with MRI and magnetic resonance angiography (MRA). The radiologist's differential diagnosis of this lesion was brainstem lesion versus partially calcified or thrombosed vertebral artery aneurysm.

Given the location of this lesion, it does not account for Ms A's cognitive symptoms. A brainstem lesion would most likely cause a significant focal neurologic deficit, and, thus, a lesion within the brainstem is less likely.

Given the results of the head CT, what action should be taken?

- A. Discuss the results with the daughter (medical power of attorney) to assess whether further workup is desired
- B. Refer the patient to neurosurgery for further evaluation
- C. Order an MRI and MRA as recommended by the radiologist
- D. It is not in the best interest of the patient to go through further testing; no further steps should be taken in this regard

Figure 4. Ms A's Computed Tomography Scan



Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

Given the results of the head CT, what action should be taken?

- A. Discuss the results with the daughter (medical power of attorney) to assess whether further workup is desired 100%
- B. Refer the patient to neurosurgery for further evaluation0%
- C. Order an MRI and MRA as recommended by the radiologist 0%
- D. It is not in the best interest of the patient to go through further testing; no further steps should be taken in this regard
 0%

After a telephone discussion with Ms A's daughter, the decision was made to forego further evaluation.

2-MONTH FOLLOW-UP

Ms A presented with her daughter for follow-up. Since the first visit, Ms A moved into the same mobile home retirement community as her daughter, who is now a 2-minute walk away.

Ms A's daughter brings meals to her and monitors medications daily. Ms A has gained 11 lb. Memantine was initiated with a remarkable reduction in Ms A's visual hallucinations, which the daughter now describes as minimal. However, cognition continues to worsen, and the short-term memory with repetition of questions is reported to be worsening. Ms A was recently seen by her primary care physician, who has adjusted the doses of levothyroxine and lisinopril.

What medication should be added at this time, if any?

- A. Atypical antipsychotic
- B. Cholinesterase inhibitor
- C. No new medication
- D. SSRI
- E. Tetracyclic antidepressant (specifically, mirtazapine)
- F. Short-acting benzodiazepine

Your colleagues who attended the Banner Alzheimer's Institute Case Conference answered as follows:

What medication should be added at this time, if any?

А.	Atypical antipsychotic	0%
В.	Cholinesterase inhibitor	20%
С.	No new medication	80%
D.	SSRI	0%
E.	Tetracyclic antidepressant	
	(specifically, mirtazapine)	0%
F.	Short-acting benzodiazepine	0%

PLAN

- 1. Continue memantine 10 mg twice a day.
- 2. Discuss the possibility of initiation of donepezil. Given that Ms A continues to gain weight at this time, and the fact that she has just been adjusting her hypertensive medication and thyroid medication, hold off on a cholinesterase inhibitor. Consider initiation of this medication at the next visit.
- 3. Monitor Ms A's visual hallucinations, auditory hallucinations, and agitation. There could be consideration of starting an atypical antipsychotic in the future if indicated, noting the lack of FDA approval for use of such medications as well as warnings regarding use in the elderly (FDA Web site, 2008).
- 4. Continue to stress the importance of providing food and increased caloric intake.
- 5. Discuss functional and safety issues with regard to living alone. Recommend that Ms A's daughter meet with our Family and Community Services team to discuss optimization of the living situation (note: Ms A's daughter later declined when this issue was discussed).
- 6. Follow up in approximately 4 months.

REFERENCE

US Food and Drug Administration. Safety. Antipsychotics, conventional and atypical. Posted June 16, 2008. http://www.fda.gov/Safety/MedWatch/SafetyInformation/SafetyAlertsforHumanMedicalProducts/ucm110212. htm. Accessed January 12, 2012

UPDATE

Two months later, Ms A's daughter called stating that her mother is having mood swings, is angry at everyone, and wants to return to her home in Michigan. Ms A has not lived in Michigan for over 20 years. Ms A is calling 911 repeatedly for no reason. The daughter now realizes that Ms A needs 24/7 care. A follow-up appointment was made for Ms A sooner than the scheduled visit.

At this follow-up visit, Ms A was found to have a 17-lb weight loss since her last appointment 2 months prior. Due to the frequent 911 calls, Ms A has received an eviction notice from her mobile home community. Even though her daughter lives in close proximity, Ms A is failing to thrive living alone. A social worker was available at this visit to help facilitate the move to an assisted living facility.

DISCLOSURE OF OFF-LABEL USAGE

The authors have determined that, to the best of their knowledge, memantine is not approved by the US Food and Drug Administration for the treatment of psychosis and agitation in Alzheimer's disease.

AUTHORS

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FINANCIAL DISCLOSURE

Dr Yaari is a consultant for Amedisys Home Health. Dr Tariot has served as a consultant for Acadia, AC Immune, Allergan, Eisai, Epix, Forest, Genentech, MedAvante, Memory Pharmaceuticals, Myriad, Novartis, Sanofi-Aventis, Schering-Plough, and Worldwide Clinical Trials; has received consulting fees and grant/research support from Abbott, AstraZeneca, Avid, Baxter, Bristol-Myers Squibb, GlaxoSmithKline, Elan, Eli Lilly, Medivation, Merck, Pfizer, Toyama, and Wyeth; has received educational fees from Alzheimer's Foundation of America; has received other research support from Alzheimer's Association, Arizona Department of Health Services, GE, Institute for Mental Health Research, Janssen, National Institute of Mental Health, and National Institute on Aging; has received honoraria from AstraZeneca, Eli Lilly, Eisai, and Pfizer; is a stock shareholder in Adamas and MedAvante; and holds a patent for "Biomarkers of Alzheimer's Disease." Drs Hall, Seward, Burke, Fleisher and Mss Brand and Dougherty have no personal affiliations or financial relationships with any commercial interest to disclose relative to the activity.

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CASE CONFERENCE

The Banner Alzheimer's Institute Case Conference is a weekly event in which physicians and staff discuss challenging and/or teaching cases of patients seen at the Institute's Memory Disorders Clinic. These conferences are attended by a multidisciplinary group that includes Banner Alzheimer's Institute dementia specialists, community physicians (internal medicine, family medicine, and radiology), physician assistants, social workers, nurses, medical students, residents, and fellows.

BANNER ALZHEIMER'S INSTITUTE

The Banner Alzheimer's Institute located in Phoenix, Arizona, has an unusually ambitious mission: to end Alzheimer's disease without losing a generation, set a new standard of care for patients and families, and forge a model of collaboration in biomedical research. The Institute provides high-level care and treatment for patients affected by Alzheimer's disease, dementia, and related disorders. In addition, the Institute offers extensive support services for families and many unique and rewarding research opportunities.

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