The Psychedelic 1960s, Hippies in Their 60s: Substance Abuse in the Elderly

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Individuals who attended the famous Woodstock concert—known collectively as hippies—were part of the “counterculture” of the late 1960s and well known for their use of illicit, sometimes psychedelic, drugs. Did they and other former hippies, who are now in their sixties and seventies, continue their substance abuse, and how are they presenting now? This case evaluates a 77-year-old man who was referred to the geriatric assessment clinic for evaluation of worsening cognition. This case illustrates the need to conduct a complete medication history, including substance abuse and dietary supplements, in elderly patients. Consultant pharmacists with knowledge of alcohol and substance abuse and the influence of this abuse on a patient’s drug regimen can make improved quality-of-life recommendations for appropriate dosage adjustments as needed.

Key words: Alcohol, Elderly, Herbal supplements, Marijuana, Substance abuse.

Abbreviations: ADL = Activities of daily living, ALT/AST = Alanine aminotransferase/aspartate aminotransferase, CBC = Complete blood count, CK = Creatine kinase, CrCl = Creatinine clearance, IADL = Instrumental activities of daily living, SAMHSA = Substance Abuse and Mental Health Services Agency.

Case Study

August 2009 was the 40th anniversary of the Woodstock music concert, a cultural touchstone for the late 1960s and widely seen as the height of the “counterculture” known, in part, for illicit—often psychedelic—drug use. Those who identified with this counterculture were known as “hippies” or “flower children.” Then in their twenties and thirties, ex-hippies are now in their sixties and seventies, and they may still be using illicit drugs. How long did today’s seniors continue their substance abuse and how are they presenting now? This case gave us an opportunity to be reminded of the music, culture, and, of course, the substance abuse of a now aging population. It also illustrates the need to conduct a complete medication history, including substance abuse and dietary supplements.

A 77-year-old man was referred to the geriatric assessment clinic for evaluation of worsening cognition. A pharmacist’s interview of the caregiver identified that the patient had a long history of illicit drug use and was currently misusing herbal and dietary supplements. After discontinuing some of his supplements and modifying his prescription medications, he had slight improvement in mental status.

As the population ages, the risk of alcohol and substance abuse use and its complications will have a significant impact on health care. As a consultant pharmacist, being able to recognize the potential for substance abuse and knowing what resources are available locally are important initial interventions.

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Based on the government office of Applied Studies, Substance Abuse and Mental Health Services Administration (SAMHSA), the National Drug Use and Health Survey, done in 2002 to 2003 among adults older than 65 years of age, 1.4 million (1.8%) used an illicit drug during the past month.\(^1\) Marijuana was the most commonly used illicit drug (used by 1.1% of older adults), followed by prescription-type drugs used nonmedically (0.7%), and cocaine (0.2%).\(^1\) In comparison, according to the same survey, 13.7 million persons 50 years of age or older (17.1%) smoked cigarettes and 36 million (45.5%) drank alcohol during the past month.\(^1\)

Additionally, 12.2% of older adults reported binge alcohol use (five or more drinks on the same day), and 3.2% reported heavy alcohol use.\(^1,2\) With the increasing prevalence of substance abuse in the elderly, there are very limited alcohol and substance abuse programs that will treat a patient older than 65 years of age. There are many safety risk factors for the elderly in the treatment of substance abuse—including the risk of a fall—in addition to complicated, comorbid disease states that require a higher level of care. These risk factors limit the available programs that are willing to provide the quality and high level of care needed for an elderly oriented substance-abuse program.

Alcohol and substance abuse can contribute to a decline in cognitive function as well as affect the pharmacokinetics of other prescription medications. Assessment of elderly patients for substance abuse is difficult since there are limited tools designed to evaluate elderly patients for such abuse. Consultant pharmacists with knowledge of alcohol and substance abuse, and the influence of this abuse on a patient’s drug regimen, can make recommendations for improving quality of life including appropriate dosage adjustments, as needed.

**Case Presentation**

A 77-year-old, married Caucasian male was referred by the Alzheimer’s Association of the San Fernando Valley, California to our geriatric assessment clinic, in spring 2009, with few medical records. He was experiencing progressive difficulties over the past couple of years (time frame not reliable) with word-finding, disorientation, agitation, and irritability. In addition, he was under stress because his family had to sell their home for financial reasons. The patient recently had an MRI suggesting a possibility of normal-pressure hydrocephalus and was scheduled for a trial shunt to see if it would improve his cognition and behavior. Additionally, the patient has gone from being a balanced and successful real estate agent for the past 10 years to a person with extreme challenges who cannot operate a telephone, or even remember his address. He has an elderly sister with a dementia disorder.

He presents to the clinic with history of the following diagnoses: Alzheimer’s dementia (from primary care physician); coronary artery disease, with a history of myocardial infarction (MI) and angiography (with stents); bradycardia, hypertension, dyslipidemia; gait and balance issues, with a history of falls; and urinary frequency, associated with incontinence and depression.

The physician took a lifestyle history, which included extensive alcohol use in the 1970s (the patient says he rarely drinks alcohol at present), and cigarette smoking (but he quit 30 years ago). He goes to the gym and does an elliptical machine for cardiovascular (CV) training and lifts free weights for strength building. Hobbies include sculpting, cooking, and reading, all of which he can no longer do.

**Medical History**

Physical exam by physician revealed:

**General appearance:** Ambulates without assistance, with a lumbering gait. No clear-cut gait instability, well-groomed. Overall health is fair.

**Eyes:** Pupils equal, round, and reactive to light and accommodation. Extraocular muscle movements intact. No conjunctival icterus.

**Mouth:** Dry buccal mucosa. Tongue midline. No dentures. No periodontal disease.

**Pharynx:** Benign.

**Ears:** Pinnae are intact. Tympanic membranes clear.

**Neck:** Supple carotids are full equal without bruits. No venous detention. Trachea midline. No thyromegaly. No cervical adenopathy.

**Cardiac:** Past history of myocardial infarction. Regular sinus rhythm. Grade 1 or 2/6 systolic murmur across precordium. Heart is in the fifth intercostals space midclavicular line.

**Vascular:** Carotid, radial, femoral, and dorsalis pedis pulses intact.

**Chest:** Full chest-wall expansion.
Pulmonary: Clear without rales, rhonchi, or rub.
Rheumatologic: Arthritis with pain involving knee, foot, leg, hip, and back.
Skin: No rash or petechiae. Warm and dry.
Endocrine: No diabetes or thyroid.
Genitourinary: Urinary frequency and incontinence.

Soft, nontender. No hepatosplenomegaly, discrete masses, or bruits. Bowel sounds active. Evidence to suggest the presence of weight loss.

Extremities: Large and small venous varicosities extending to the knees. History of venous ligation. Ankle and leg edema bilaterally. Onychomycosis noted. No calf tenderness but complains of occasional leg cramps.


Cognitive status: Folstein Mini-Mental State Exam (MMSE) with a total score of 15/30 with orientation only 3/10, registration 1/3, and he needed three tries to get the three words. Attention and calculation was 1/5 and recall was 2/3. There was no evidence of visual-spatial deficit. The clock drawing was abnormal; in fact, he could not draw a clock. Executive control dysfunction was evident. Patient Health Questionnaire 9 (PHQ-9) for depression screening was done with a score of 1 (greater than 3 would be significant for depression).

Functional status: Assessment of activities of daily living (ADL) was 6/6 but Instrumental activities of daily living (IADL) was 4/8 where he is unable to cook, do his own finances, drive, or use a telephone independently.

Vital signs: Blood pressure = 154/68 mmHg, Pulse = 43 bpm (standing), Respiratory rate = 12, Temperature = afibrile, Weight = 169 lbs, Height = 68 inches.

Medication History
Patient was referred to the consultant pharmacist for a complete medication history. There were no pharmacy records because the patient had used multiple pharmacies over the years, and no medical records were available that would have shed a history of start-stop dates for medications. The patient and family were unreliable in giving medication dates for previous medication, but the patient was able to provide his current medication regimen. Medication history included that he was allergic to penicillin. We determined that his daily prescription regimen as of April 1, 2009, consisted of the following:
- Pravastatin 40 mg: one tablet daily
- Lisinopril 2.5 mg: one tablet daily
- Aspirin 81 mg: one tablet daily
- Niacin extended-release 500 mg: one tablet daily
- Triamterene/hydrochlorothiazide 37.5/25 mg: one tablet daily
- Sertraline 25 mg: one tablet daily
- Donepezil 10 mg: one tablet daily
- Memantine 10 mg: one tablet two times a day

Further questioning by the pharmacist noted that he was currently on quite a few dietary and herbal supplements for “years” which were as follows:
- B-100 complex daily
- Coenzyme Q 10 three times daily
- Omega-3 fatty acid 1 g three times daily
- Core Complex daily (vitamins A, E, B6, B12, fish oil, phytosterol esters, omega-3, krill oil, alpha-lipoic acid, medium chain triglycerides, quercetin, dried rosemary extract)
- CardioHealth daily (vitamin E, fish oil, omega-3)
- B12 500 mcg twice daily
- Folic acid 0.8 mg daily
- Vitamin C 1000 mg twice daily
- Vitamin E 800 units daily
- Beta carotene daily
- Valerian root complex at bedtime
- Vitamin D3 400 units daily
- Calcium complex daily (vitamin D, calcium, magnesium, zinc, copper, manganese, boron herbal blend, tumeric, rose hips)
- Triple Berry Complex twice daily (cranberry powder, bilberry extract, blueberry powder)
- Schizandra Plus twice daily (vitamins A, C, E, B6,
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Pantothenic acid, calcium sulfate, selenium, exclusive blend schizandra, L-cysteine, L-phenylalanine

- Mega Garlic Plus tablets three times daily
- Garden 7 phytonutrients (vitamins A, C, B₁₂, calcium carbonate, garlic powder, cranberry extract, carrot powder, broccoli extract, hesperidin [from orange fruit bioflavonoids], quercetin, grape skin extract, spinach powder, glucosinolate [from broccoli extract], allicin [from garlic powder], lycopene, lutein, zeaxanthin)
- Rose OX 500 mg daily (calcium, exclusive herbal blend, dried rosemary extract, cruciferous vegetable concentrate [broccoli, cauliflower, cabbage, carrots], dried turmeric extract from root, tomato concentrate, sage leaf, cloves)
- Joint support (MSM, glucosamine, turmeric, boswellia)
- Multivitamins twice daily
- Cell Activator daily (potassium magnesium aspartate, citric acid, malic acid, fumaric acid, aspartic acid, glutamic acid, succinic acid, inositol, chlorella, shiitake mushroom, L-glutamine, dried cordyceps extract, dried rhodiola extract, cayenne powder, dried reishi mushroom, dried pine bark extract [pycnogenol])
- NiteWorks (nitric oxide, L-taurine, L-arginine, L-citrulline, vitamin C, vitamin E, lemon balm extract, alpha-lipoic acid) at bedtime
- Protein-blended smoothies with meals

His wife told us that he has some flushing when he took the niacin, but was able to tolerate it most days, but there were days that he refused the niacin.

When questioning this patient on his cognitive ability, the patient agreed to have his wife present most of the history; he agreed with most of the information, and provided some additional information. The pharmacist asked about lifestyle practices, and found additional information that was not disclosed to the physician:

- Use of marijuana multiple times a day, from 1968 to 1998
- Use of cocaine multiple times a day, from 1968 to 1998
- Cigarette smoking 1-2 packs per day, but stopped 30 years ago
- Heavy alcohol use of one pint of vodka, tequila, and/or a bottle of wine daily, from 1960s; continues currently, but has tapered (one to two glasses of wine or one ounce hard liquor daily with dinner) (but the pharmacist questioned the accuracy of this; probably more alcohol use than admitted to)
- Caffeine intake of tea multiple times per day, quantity not consistent (used to drink coffee one to two cups a day when working)
- Wife stated that when he was heavily drinking and using drugs he sometimes had difficulty with words, did not know where he was, and his behaviors were aggressive and agitated at times. However, he never hit her.

Laboratory findings that were out of normal range (normal range in parentheses) included:

- Albumin, 3.8 g/dL (3.4-4.7 g/dL)
- Creatine kinase, 737 units/L (50-200 units/L)
- Vitamin B₁₂, > 1200 pg/mL (200-900 pg/mL)
- Folate > 20.0 ng/mL (3.1-17.5 ng/mL)
- Aspartate aminotransferase (AST), 87 units/L (< 40 units/L)

Alanine aminotransferase (ALT) 95 units/L (< 40 units/L) was slightly elevated. Electrolytes, TSH, CBC were within normal limit. Calculated creatinine clearance (CrCl) was estimated at 36.4 mL/min using Cockcroft-Gault equation.

Pharmacist’s Assessment

There are several concerns with this patient. First, was this patient’s ability to clear any medications, because of his renal and hepatic function, compromised? (CrCl decreased, and creatine kinase [CK], and ALT/AST were all elevated). Second, was the amount of herbal supplementation with many products resulting in duplicate ingredients affecting cognition and liver function. Third, is the cognitive decline actual brain damage from the substance abuse or is it truly Alzheimer’s-type dementia?

Pharmacist’s Intervention

The pharmacist worked on convincing the family that some of the supplements being taken by the patient were duplications, and they were not beneficial for the patient. Duplicate ingredients can, for example, have added toxicities on the liver and kidneys. Of particular concern for this patient were the multiple fat-soluble vitamins A, D, and E, the folate and vitamin B₁₂ as well as the minerals (e.g., selenium). Also the side effect profile of some of the agents such as the valerian root may affect liver function, which may further compromise this patient. The pharmacist recommended that the following be discontinued:
■ Schizandra combination berries
■ NiteWorks
■ Valerian root complex
■ Garden 7 phytonutrients
■ Rose OX 500 mg
■ Core Complex
■ Vitamin E
■ CardioHealth
■ B-100 complex
■ B12 500 mcg
■ Folic acid
■ Cell Activator

The consultant pharmacist recommended that the patient take the aspirin with dinner and the niacin 30 minutes later to reduce the possibility of flushing. Additionally, the pharmacist recommended that the B-complex, vitamin B12, and folate be discontinued because the blood levels were above normal range. Also, the pharmacist recommended that the physician assess if pravastatin was contributing to the elevated CK and liver function tests and if the statin should be discontinued.

There was concern over effectiveness of the memantine and donepezil with the possibility of brain injury from the long-standing illicit drug use, and we referred the patient for a PET scan. In the interim, because of the patient’s loss of appetite and decreased heart rate, use of the donepezil was placed on hold. As a result of the decreased kidney function, the pharmacist also advised a reduction in memantine to 10 mg daily. The pharmacist advocated that sertraline be moved to the morning to decrease the sleep disturbances.

On the follow-up visit a change from triamterene/hydrochlorothiazide to a loop diuretic will be considered because so many discontinuations and changes were being made this visit. No significant drug interactions were present to change medications; however, several were present that should be monitored. For example, Sertaline and omega-3 fish oils can prolong bleeding time with aspirin. The patient was instructed to return for follow-up visit in two weeks.

On return to clinic, his cognition was slightly improved from previous (MMSE 17/30) and in IADL (able to cook a bit). The wife did stop all of the herbal products recommended, but was reluctant to share which ones were continued; however, she said she is working on stopping all of them. His spouse reported less alcohol use and no marijuana use (she told us that the marijuana had stopped, but on the follow-up visit explained that there was occasional use). It is uncertain how much the herbal agents were contributing to the cognitive issues. The recommended PET scan was not done because the insurance would not cover it. The source of memory loss was inconclusive at this time. The wife wanted the donepezil restarted because she feared the progression of memory loss. The pharmacist discussed a potential trial of rivastigmine patch in the future because of fewer drug interactions and topical administration. Furosemide will be considered if changes in blood pressure or edema occur. The pravastatin was placed on hold and lipid panel ordered.

Discussion
In the elderly, illicit, prescription drug, and nonprescription drug use is often missed in medical assessments, leading to what some might refer to as a hidden or “closet” epidemic of substance abuse. The 1960s hippies are now in their sixties and seventies, and a number have continued their illicit drug use, which can contribute to acute and chronic comorbidities. Additionally, elderly patients with chronic pain (for example, pain associated with arthritis) have good access to opiate medications, and those patients who have a tendency for abuse can easily get their choice of agents. An elderly patient may not seek help for the alcohol or substance abuse issue until secondary comorbid disease states such as depression and anxiety arise. Normal physiologic changes of aging combined with a substance-abuse history can potentially lead to significant medical complications including liver, renal, and CV dysfunction. Increased geriatric hospital admissions related to substance abuse will likely become a public health concern. For example, Adams et al. presented a study in 1989 that showed charges to Medicare associated with the primary alcohol-related issues totaling $233,543,500. The number of adults 50 years of age and older with substance-abuse problems is projected to reach more than 4.4 million by the year 2020, having a significant impact in the health care system for substance-abuse treatment as well as related medical conditions.

According to SAMHSA, in 2005 there were 11,300 hospital admissions of individuals 65 years of age and older to substance-abuse treatment programs. Adults
65 to 69 years of age made up the largest part of the substance-abuse treatment population, increasing from 56% from 1995 to 59% in 2005. In each year between 1995 and 2005, alcohol was the most frequently reported substance used on admission to treatment programs, while reported opiate use increased from 6.6% to 10.5% in the same time period.

The “baby boomer” generation grew up in a time marked by drug and alcohol experimentation, and alcohol can significantly affect the concurrent medical conditions in a geriatric patient. Alcohol-related health problems for elderly patients include: falls with fractures, insomnia, confusion, delirium, dehydration and malnutrition, hypoglycemia, electrolyte imbalances, late-onset seizure disorder, hypertension, congestive heart failure, gastrointestinal disorders, and incontinence, to name a few. Additionally, with the number of medications being taken by geriatric patients, alcohol can contribute to substantial drug interactions. Detection of any alcohol or other drugs of abuse problem is a critical first step toward minimizing medical complications.

There are several screening tools to use if substance abuse is suspected. However, there is no one validated screening tool appropriate for the elderly. The importance of asking the general questions of “How often do you drink alcohol?” and “Have you used any drugs for recreational use?” is a good place to start a substance-abuse assessment. Positive answers to these questions will lead to more advanced questions. The CAGE questionnaire, and the Michigan Alcoholism Screening Test—Geriatric Version (MAST-G), are geared toward detecting alcohol abuse, and the Drug Abuse Screening Test (DAST) is for other drugs of abuse; however, although useful, the DAST and CAGE are not specific to the geriatric patient.

The CAGE is the most widely used assessment for alcohol abuse as it is a simple “Yes or No” four-item questionnaire that can be incorporated into any medical interview by all health care professionals. The MAST-G is a 24-item questionnaire in dichotomous format that was developed to target specific geriatric-related issues for alcohol use. However, it can be too long for some geriatric patients to complete.

The four questions of the CAGE are:

1. Have you ever felt you should Cut down on your drinking?
2. Have people Annoyed you by criticizing your drinking?
3. Have you ever felt bad or Guilty about your drinking?
4. Have you ever taken a drink first thing in the morning (Eye opener) to steady your nerves or to get rid of your hangover?

After detection of a condition related to substance abuse, a common question is where can the patient and family be referred? Currently there are limited programs that specifically address the needs of the elderly with a history of substance abuse. The best referral is to a geriatric psychiatrist. There are self-help groups such as Alcoholics Anonymous, Al-Anon, and many others available, but they may not have the capacity for the special needs of the elderly. A good referral source is the SAMHSA Web site, which can help with finding a treatment center at www.findtreatment.samhsa.gov. There will need to be many more treatment programs for substance abuse geared toward the elderly to accommodate this growing sector of the population.

Long-term effects of substance abuse can contribute to medical complications. With marijuana abuse, heart rate can be increased by 20% to 100% after smoking, and last up to three hours. It is estimated that marijuana users have a 4.8-fold increase in the risk of a myocardial infarction during the first hour of smoking, and this may be greater the older the user is, especially if comorbid cardiac disease is present. Marijuana smoke contains 50% to 70% more carcinogens than tobacco smoke, and marijuana users generally inhale more deeply and hold their breath longer than tobacco smokers, increasing lung exposure. High-dose users of marijuana can experience an acute psychotic reaction. Long-term marijuana use has been studied in mice to cause changes in the activity of nerve cells containing dopamine. Neurons involved in the regulation of motivation and reward are mediated by dopamine. Additionally, marijuana use can affect memory, learning, and problem-solving ability.

Common adverse effects of cocaine include: blood-vessel constriction, dilated pupils, and increased body temperature, heart rate, and blood pressure, as well as headaches, abdominal pain, and nausea. Cocaine also can decrease appetite, so long-term users can become malnourished. However, effects of cocaine use vary depending on the route of administration. Long-term
intranasal use (snorting) of cocaine can lead to loss of sense of smell, nosebleeds, problems with swallowing, hoarseness, and a chronically runny nose.\(^{15}\) Oral ingestion of cocaine can cause severe bowel gangrene as a result of reduced blood flow.\(^{15}\) Injecting cocaine can cause severe allergic reactions, and sharing needles can increase the risk for HIV and other blood-borne diseases such as hepatitis.\(^{15}\) Mental adverse effects of cocaine use include severe paranoia with auditory or tactile hallucinations, anxiety, irritability, and restlessness.\(^{15}\) Regardless of the route of administration, cocaine users are at higher risk for emergent complications of seizures, stroke, MI, and sudden death.\(^{15}\)

For this patient, the dysphagia and CV disease states may be related to cocaine use, and the memory issues could be related to the substance abuse, but this is uncertain. In addition, for this patient there is the concern of the multiple herbal substances, which can affect cognitive function. For example, valerian root is an anxiolytic similar in action to benzodiazepines; an increase in gamma-amino butyric acid, the inhibitory neurotransmitter, may contribute to confusion. Lemon-balm extract has mild sedative properties that may also contribute to decline of cognitive function. The glutamate is an activating neurotransmitter to the brain cells, and mushroom products can increase dopamine, which many contribute to hallucinations. Herbas also should be considered in the assessment of cognitive decline; while natural, they are not benign.

### Conclusion

The “flower children” of the psychedelic 1960s and their experimentation with illicit drugs are now blossoming into our fast-growing elderly population with medical complications of their substance abuse. When assessing any geriatric patient, all health care providers—especially the pharmacist—should ask questions related to drug- and substance abuse. Knowing what questions to ask a patient and what to look for in assessing substance abuse as well as knowing local resources for referral including self-help, treatment programs, and geriatric psychiatrists is a critical first step in an intervention.

### Clinical Pearls

- Don’t assume older patients don’t partake in substance abuse
- It is becoming more critical to ask patients about herbal and dietary supplement use
- Illicit drug use during early adulthood may contribute to medical conditions in older adults

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