Delirium In The Elderly

by Julie Aberger

EMT Objectives

After reading this article, the EMT will be able to:

- understand the medical implications of an acute onset of delirium in the elderly patient;
- know the signs and symptoms of delirium;
- list the conditions that predispose an elderly person to delirium;
- cite the range of medications that commonly induce delirium in the elderly patient;
- cite the range of brain insults that can produce delirium in the elderly;
- list the differences between dementia and acute delirium;
- discuss effective EMS management techniques in assessing, treating and transporting an elderly patient with delirium.

Introduction

You're dispatched for "stomach pain." The patient is an 81-year old female, slumped over on a living room couch, her face hidden in the folds of the pillows. Her daughter stands nearby.

"Mrs. Johnson!" you call as you quickly palpate her radial pulse. Her skin is flushed, dry and a bit warmer than normal.

After you and your partner sit her up, you ask her, what's wrong? "I can't breathe," she says. Her pulse oximetry reading is 97%, her respiratory rate is 16 bpm, her speech, halting.

You ask her if anything hurts. While you're questioning her she watches you intently, but when you stop, her eyes wander. Moments pass and suddenly she notices you at her side. You ask again: "What's wrong?"

"I'm sick," the woman finally says faintly. She stares vacantly into the distance. You continue your questioning but the woman's answers lack clarity.

Her daughter says she has been like this for two days, complaining of a stomachache one moment, difficulty breathing at another. She eats and drinks little, is up all night and catnaps during the day. Occasionally she shouts something, but her words make no sense.

What's going on? Your mind is as blank as the patient's face.

How often are we called to a home or nursing home to care for someone who seems healthy, but is not making sense? Or someone who cannot say why he called 911, but is obviously in distress? How often do we deliver an older patient to the emergency department not knowing what the chief complaint is other than "the patient is not herself today," i.e., altered? Elderly patients presenting with altered mental status are common in EMS practice.

Delirium takes on many appearances, and each guise can be an indicator of any number of underlying conditions that may take days in the hospital to clarify. For EMTs whose exposure time with the patient is usually limited, awareness is key. *EMTs should understand that a **sudden** change in an elderly person's affect, e.g., consciousness, cognition and perception, is a serious complaint.*

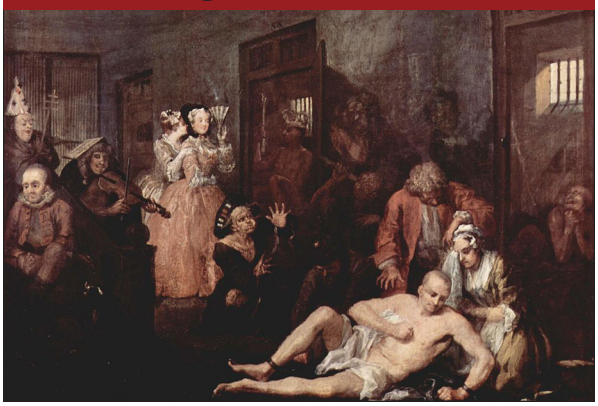
In patients who are admitted with delirium, mortality rates are 10-26%. *In patients who are elderly... delirium may result in a prolonged hospital stay, increased complications, increased cost, and long-term disability.*

Plowing Off-Center

Delirium has an interesting, albeit, cruel history. For many centuries, delirium was seen sometimes as a symptom and other times, a syndrome – a highly lethal syndrome with a poor outcome for survivors. Most sufferers, many of them elderly, spent their lifetimes in "insane asylums," tied to beds, lying naked on frozen floors, hosed with cold water, given barbaric treatments and forgotten. *[See Figure 1.]* Not until the 20th century did it become evident that

Figure 1:

William Hogarth's "Bedlam" - 1735



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delirium was characterized by a full recovery among survivors, distinct from dementia. And that delirium often stemmed from a physiological cause – something wrong with the physical body – not a psychological one.

The word *delirium* derives from an ancient agricultural term used to describe a faulty method of plowing, whereby the earth thrown up by a plow between two furrows lands off-center, causing the rows of plants to be crooked. In the 16th century, however, the word took on the connotation of "I deviate from the straight track," and subsequently, "I'm no longer in my right mind."

Delirium is recognized as a symptom/sign, or manifestation, of acute illness that has many causes.

Today delirium is recognized as a symptom/sign, or ***manifestation***, of acute illness that has many causes. In this article we will examine some of the more common causes of delirium in the elderly patient, causes that disturb a person's affect, or his feeling or emotion, especially as manifested by facial expression or body language.

Frickin' Nuts!

As we have stated, delirium is an alteration in a person's consciousness, cognition and perception. These disturbances usually occur over hours-to-days. The condition may appear suddenly, or may present over several days with mild symptoms such as difficulty sleeping, anxiety, agitation, inattentiveness, and short-term memory loss.

Signs and symptoms of sudden onset of delirium include:

- Changes in attention: The patient is unable to focus; his mind wanders.
- Changes in cognition: The patient is no longer oriented to person, place, or time. Or the patient has sudden lapses in memory that are unusual.
- Changes in perception: The patient has delusions or hallucinations. A delusion is a mis***belief*** in what is generally accepted as reality, for example, a fantasy or illusion.

A hallucination is also an illusion, but one that stimulates the senses. The patient perceives – sees, hears, smells, feels, etc. – something that is not present, e.g., the patient hears a pack of wild dogs barking outside her door, or feels bugs crawling over his body.

Delirium comes in a range of behaviors. The delirious patient may be passive, hyperactive, depressed or aggressive. Your patient may be sleepy, crying, raving, harming himself or others. He may be cursing and confused at home yet speak and act like a gentleman at the hospital. The spectrum of behaviors fluctuates with time.

How do EMTs often react when confronted with such a patient? "He's frickin' nuts!"

Think again.

Why Does Delirium Occur Commonly in the Elderly?

Conditions that predispose the elderly to delirium include: the aged body and brain, poor homeostatic regulation, and impaired vision and hearing. Drugs often have deleterious effects, causing more harm than good.

As we age, the brain loses its resiliency to withstand trauma and/or infection, because of changes in cerebral biochemical activity affecting the cerebral cortex, the outer layer of the brain. This section of the brain plays a key role in memory, attention, perception, cognition, awareness, thought, language and consciousness. Directly under the cerebral cortex, the subcortical structures that enable fast, unconscious motor reactions, such as reflexes, are negatively affected as well.

The brain controls the function of the body; its 100 billion neurons, or nerve cells, are designed to stimulate corresponding cells into action. Everything we think or feel is a result of these nerve cells communicating with each other, called neurotransmission. In the autonomic nervous division of the peripheral nervous system, chemical messengers, called neurotransmitters, send signals across nerve synapses, either inhibiting (balancing mood, regulating sleep cycle) or stimulating (motivating) an action. More than 100 unique neurotransmitters have been identified, common ones being epinephrine, acetylcholine, histamine, serotonin, glutamate, and dopamine.

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With age, the senescent brain becomes less efficient, and neurotransmission becomes sluggish. When neurotransmitters are not being synthesized (metabolized) properly, the imbalance commonly produces changes in arousal, alertness, attention, information processing, memory, and normal sleep-wake cycle. Homeostasis – the body's ability to seek and maintain an internal equilibrium – becomes a slippery slope.

Pharmacopoeia:

You are dispatched for an altered 74-year old male on the third floor of an old city building. As you carry your equipment up the steep rickety steps, your crew struggles with the litter behind you. When you open the man's apartment door, you are confronted with the smell of rancid food and urine. You see stacks of papers, empty cans, and bottles throughout the vast room.

"Ambulance here!" you yell, but are met with silence. Then you hear a voice, "All hands on deck! The ship is foundering! We're going down!" The patient is found naked except for a Navy cap on his head, sitting on the floor near the window. As you address him, he stares straight ahead. Then you notice a table crowded with opened pill bottles. Hundreds of tablets are spilled over the surface.

The elderly are more likely to have multiple medical conditions and be

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taking numerous prescribed and over-the-counter medications. It is common, however, that they are not aware of the drugs, their actions and their dosages. (When asked about meds, how often do EMTs hear patients say: "It's a little blue pill."?) Stories abound of EMS handing over the patient at the hospital with a bag crammed full of meds, some expired, others without labels.

Persons aged 65 years and older comprise only 13% of the population, yet account for more than one-third of total outpatient spending on prescription medications in the United States. Pharmacopoeia, or multiple drug use, creates significant problems for an age group that is often ill-equipped to handle the physiological assault.

As we have said, prescribed, over-the-counter and illicit drugs are common causes of delirium among the elderly, accounting for 22%-39% of cases. Why is this?

- The aged body metabolizes at a slower rate, toxicity becomes a problem and the elderly patient may suffer harmful side effects.
- Cognitive decline can contribute to the misapplication of drugs.
- Impaired vision and hearing can lead to accidental under- or overdose.
- A large number of older adults use over-the-counter meds and dietary supplements which can alter a prescribed drug's intended action.
- Inappropriate use: Who hasn't heard of the husband taking the wife's medications, because he had "run out" of a medication, or to save money?
- Socioeconomics: From the National Council on Aging: *Over 25 million Americans aged 60+ are economically insecure—living at or below 250% of the federal poverty level (FPL, which is currently $29,425 per year for a single person). These older adults struggle with rising housing and health care bills…* Some seniors may not be taking their prescribed medications simply because they can't afford it.

Delirium may stop quickly when a new drug is discontinued. Conversely, abrupt discontinuation of a drug can also cause delirium. Overdose, withdrawal, or adverse reactions to drugs, may cause a sudden onset of delirium as well.

Drugs that commonly provoke delirium in the elderly include: levodopa, (Laradopa®) for Parkinson's Disease; meperidine, Ambien® for sedative/hypnotic effects; ranitidine, (Zantac®) for GI reflux; Benadryl® an antihistamine; warfarin, Eliquis®, anticoagulants for stroke, heart attack prevention; digoxin, (Lanoxin®) for heart failure or A-Fib; diltiazem (Cardizem®) for hypertension and angina; theophylline, (Uniphyl®) for COPD and asthma; ciprofloxacin, (Cipro®) antibiotics, and many, many others.

Therefore, a complete patient history and a list of medications are vital to the ER physician when dealing with a change in affect. But realize, the list of drugs that can produce delirium is legion.

Trauma/Cerebral Insult

Your elderly neighbor calls you for help. His spouse has run out into the road and collapsed. You call 911, then go outside to find the old woman sprawled on the street, her arms and legs akimbo, a terrified look on her face. She is stuporous, not responding to any of your questions. Her spouse tells you that she had suddenly begun yelling "Don't hurt me! NO! NO!" and fled the house. Later at the hospital, an MRI reveals a subdural hematoma, a venous brain bleed. The patient's husband then recalled his elderly wife had fallen a week before and hit her head. At the time, his wife thought it 'just a goose egg.'

Stroke (CVA) and transient ischemic attack (TIA) can also cause an abrupt change in affect resulting in delirium.

No matter what the age, any structural "insult" can produce delirium, i.e., patients with a history of head trauma or CNS infection. Stroke (CVA) and transient ischemic attack (TIA) can also cause an abrupt change in affect resulting in delirium. A head computed tomography (CT) scan or magnetic resonance imaging (MRI) scan is needed to rule out any neoplasms (abnormal growths of tissue), brainstem lesions, closed head injuries, cerebral bleeds or clots. A lumbar puncture is also used to detect infection, i.e., inflammation of the brain caused by infection or allergic reaction such as meningitis. Your ranting/raving patient may have suffered brain trauma or infection. History is all-important here.

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Asked At Convention:

What is the biggest or toughest problem your squad is now facing?

"Manpower, specifically daytime coverage. We are working on some fixes."

Eric Rudd
Belvidere AC

"Staffing and scheduling."

Carrie Niler
Lincoln Park EMS

"Getting existing members to become more active. This includes new as well as experienced members."

Scott Maynard
Livingston FAS

"Attracting quality members accountable for more than just resumé-building; convincing them that a proficient EMT is more than just a Basic Course. It takes years of experience and continuous education to deliver excellent patient care."

Barbara Nelson
Mendham FAS

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Alcohol

You are called for a "sick person" at an affluent home of an older woman, renown for her philanthropy. The maid who ushers you in tells you "Mrs. Royce is a wee bit under the weather today." She also tells you that her employer "likes her martinis" but hasn't drunk any alcohol for two days. "She's given them up for Lent," the maid explains.

You enter the woman's bedroom, but there's no one there. You call, "Mrs. Royce!" There is no response. Searching the room, you find the 80-year old lady in her nightgown, on the floor under the bed. She says "poisonous ants were crawling over her." Her face is covered with deep-red scratch marks. You note her slurred speech and tremors. After much persuasion, you convince the woman to go to the hospital "to get medicine to rid her of the ants." As you leave the house with the patient on the litter, you cross paths with a young deliveryman shouldering a full case of high-priced vodka into the house. The local cop accompanying you tells the kid to get lost.

There are 2.5 million older adults with an alcohol or drug problem. Alcoholism has no social boundaries: It affects people of all incomes and ages. Alcohol can become a habitual "friend" to the impoverished old man who lives alone or to the wealthy scion of society surrounded by luxury.

Alcohol is a neurotoxin that damages the brain in a complex manner through prolonged exposure and repeated withdrawal, resulting in significant illness and death. Alcohol-related psychosis is often an indication of chronic alcoholism and its withdrawal causes a full spectrum of symptoms ranging from mild anxiety to full-blown delirium tremens (DTs) with agitation and seizures. Sudden discontinuation of alcohol for the alcoholic can be fatal. Always check the altered patient's history for ETOH use, chronic or acute. Look for signs of alcoholism such as the smell of alcohol, anxiety, agitation, hypertension, diaphoresis, flushed skin, distended abdomen and broken capillaries on the face and nose.

Infection

You are called for "altered mental status." While gathering your patient's history, a family member tells you that their 68-year old father had always been in good health until he had a routine biopsy for prostate problems a day earlier. The next day he became confused and withdrawn. He then began saying nonsensical things, and whispering to old friends from his childhood. He also complained of chills and aching muscles. His orientation was not completely altered, but his "wandering mind" was the only clue the family had that something serious was wrong. You note that the patient's skin is warmer than normal, dry and very pale. By the time you reach the hospital, the patient is obtunded, i.e., he is conscious, but not reacting to any verbal stimuli. At the ED, the physician begins emergency treatment for sepsis. The patient dies several days later.

Alcohol-related psychosis is often an indication of chronic alcoholism and its withdrawal causes a full spectrum of symptoms ranging from mild anxiety to full-blown delirium tremens (DTs) with agitation and seizures.

Infections, especially of the urinary tract and pneumonia, are another common cause of delirium. As a matter of fact, sometimes the ***only*** symptom an elderly patient has of an infection is delirium! She'll present with severe confusion before any evidence of fever, tachycardia and/or pain.

One of the markers of sepsis – massive systemic infection – is delirium. Sepsis is commonly due to bacterial and fungal infections, as well as noninfectious causes, such as pancreatitis or trauma. Infections can stem from indwelling IVs and catheters to invasive procedures, like biopsies. Sepsis ***syndrome*** is the systemic response triggered by an infection that is met with an activated inflammatory cascade within the body. The organism is overwhelmed, resulting in a whole host of signs and symptoms. Delirium may be the least subtle clue.

Opioids

You are called for "sick person." The 68-year old man had been sent home from the hospital two days previous after having had surgery placing a metal rod and screws in his femur for a "broken hip." The daughter tells you her father has not spoken to her in 24 hours.

*As you enter the room, you see the man sitting up in bed with a breakfast table over his lap. On it is a cup of thick soup. As your partner takes notes from the daughter, you address the man, asking him what hurts. The man remains silent and does not look at you. Slowly he tips the cup of soup onto the table. With his finger, he writes **F B I** in it and nods towards his daughter. He then puts his finger to his lips and whispers: "Shhh."*

Before surgery the anesthesiologist had administered a benzodiazepine to this patient to relax him. During

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surgery he was given propofol as a general anesthesia, and in the recovery room, he received morphine sulfate for pain relief. One surgeon described the man's altered mental state as "post-operative," and that the delirium would disappear as soon as the narcotics cleared his system. The opioids, such as fentanyl, morphine sulfate, and oxycodone, can cause delirium in the elderly patient before, during and after surgery. Transformations are sudden and dramatic: Your sweet mother who never uttered a bad word in her life may be cursing like a truck driver. Fortunately, these effects are usually shortlived.

Heat and cold emergencies commonly alter an elderly person's affect; the brain reacts badly to temperature changes.

Electrolyte Abnormalities

Deficiencies of certain electrolytes, e.g., minerals and vitamins, can also cause delirium. Too little sodium, too much potassium, dehydration, fluid imbalance, and malnutrition are but a few of the dietary imbalances that can impact the elderly patient's affect and impair his behavior. When alcoholism causes a deficiency of Vitamin B12, an alcoholic will suffer delirium.

Poor nutrition, bad diet, GI problems (beginning with poor dental care and decreased saliva production), and diabetes, all common to the elderly, can produce deficiencies in normal metabolism. Other deficiencies in the bloodstream include, for instance, hypernatremia and hyponatremia (too much-too little salt), hypercalcemia (too much calcium), hypomagnesemia-hypermagnesemia (too little-too much magnesium) – and all can cause delirium. Organ failure such as congestive heart failure, kidney, liver insufficiency, and endocrine deficiencies – all common among the elderly – can also be culprits in this loss of affect called delirium.

Heat & Cold

You are called to the local sportsman's club for "man vomiting." As you enter the kitchen of the club, you are directed to "Bubba," a 72-year old overweight man, dressed in shorts and a teeshirt sitting on a stool near the stove, looking vacant. Pools of vomit are on the floor at his feet. He is babbling and makes no sense. Even though it is 90 degrees outside and at least 100 inside the kitchen, his skin is dry and hot. His pulse is 156 bpm, his blood pressure is 96/54, and his respiratory rate is fast and shallow.

His friends tell you Bubba had been cooking dogs and kraut all morning for that afternoon's picnic. Then he tried a couple of beers "to cool off." Bubba is now trying to recite the Gettysburg Address.

Heat and cold emergencies commonly alter an elderly person's affect; the brain reacts badly to temperature changes. Hyperthermia has a direct effect on the central nervous system, raising the brain's temperature, altering its blood flow, cognitive function, neurotransmissions and neuromuscular activity.

The elderly don't require Arctic temperatures to become hypothermic. A lot depends on a person's age, body mass, body fat, overall health, and length of time exposed to cold temperatures. A frail, older adult in a 60-degree house can develop mild hypothermia overnight. Certain medical conditions such as hypothyroidism and diabetes, some medications, severe trauma, use of drugs and/or alcohol, all increase the risk of hypothermia that in turn raises the possibility of mental changes.

Low body temperature slows brain activity. Normal body temperature averages 98.6 degrees. With hypothermia, core temperature drops below 95 degrees. In severe hypothermia, core body temperature can drop to 82 degrees or lower. Your hypothermic elderly patient may have memory loss, be slow to speak and/or move, shiver, or slur his words. He may be uncoordinated, stumbling and falling. (You may wonder: "Alcohol?") His home may be underheated or overheated and he may be wearing multiple layers to keep warm.

Delirium Vs Dementia

Delirium is also a feature of dementia, and it is often difficult to differentiate the two. Is the patient delirious due to one of many physiologic causes, or is it dementia, a progressive disease that usually involves a longer period of time, often years? *[See Table 1, below]*

The prevalence of dementia in the United States today is about 1% at age 60, but doubles every 5 years until it reaches 30% to 50% by 85 years of age. By 2030 it is estimated that there will be approximately 10 million people with Alzheimer's dementia in the U.S.

What is dementia and how does it differ from delirium?

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Table 1:

Differentiating Features of Delirium and Dementia

Feature	Delirium	Dementia
Onset	acute	insidious
Course	fluctuating	progressive
Duration	days to weeks	months to years
Consciousness	altered	clear
Attention	impaired	normal (except in severe dementia)
Psychomotor Changes	increased & decreased	often normal
Reversibility	usually	rarely

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Dementia is a broad term used to describe more than 50 different disease states primarily Alzheimer's disease, which involves atrophy (wasting) of the grey and white matter of the brain. The presence of dementia increases the risk of delirium two-to-three times.

Typically dementia has a gradual onset that develops over months if not years, with little change in day-to-day or even week-to-week behavior. Dementia victims are usually the elderly. Their vital signs are normal unless they are ill.

EMS Care

Delirium is a medical emergency. As always, during our primary assessment, we assess and manage the patient's A-B-Cs, treating any anomalies as they arise.

- Is the patient hypoxic? What is her pulse oximetry? Below 93%, provide supplemental oxygen.
- Is the patient diabetic? Ask the family or caregiver. If the patient is exhibiting signs and symptoms of hypoglycemia, and can swallow, give oral glutose.
- Has the patient taken an overdose of opioids? If so, administer Narcan®.
- Does the patient have a history of alcoholism? Has the patient ingested a toxic substance, either intentionally or accidentally? How about carbon monoxide poisoning?
- Medical history: Illness? Trauma? Procedures? Hospitalizations? All essential information.
- Medications? Prescribed, over-the-counter, homeopathic?
- Socioeconomics: Is the patient living in poverty? Is there food in the refrigerator? Is there heat and air conditioning? Hypo- and hyperthermic patients may be delirious. Passive rewarming is indicated for hypothermia; passive cooling for hyperthermic patients.

Supportive Treatment:

- Do not overwhelm the delirious patient. Speak slowly and, if the patient has no hearing problems, softly. Turn down (or off) the extraneous radio chatter. Keep on-scene personnel to a minimum. And there's no reason for lights-and-sirens unless it's a life threatening illness or injury.

Make certain you have the patient's eyeglasses, hearing aids, cane or walker with him to go to the hospital. A list of current medications (dosage, route and time) is essential.

Do not overwhelm the delirious patient. Speak slowly and, if the patient has no hearing problems, softly.

You must protect your patient from harming himself or others while in your care. Restraints may be needed, but first seek the patient's cooperation with gentle words and actions. Physical restraints may increase his agitation, risking injury to yourself and him. (Physical restraints in agitated patients have been associated with significant injuries and even death by asphyxiation and should be used sparingly. ***Squads should periodically review their SOPs on the use of restraints.)***

It is essential that if the patient has no family or friends, caregivers or support, that you be his advocate. This means assuring him that he is being taken to "a safe place," the proper facility with caring, competent nurses and doctors, who will support him emotionally as well as medically. Hospitals should not be viewed as dumping grounds for the emotionally unstable elderly person who might be homeless or indigent due to life circumstances.

Remember: When you deal with elderly patients who are exhibiting bizarre behavior, "Do No Harm" also means "Do the Right Thing." These unfortunate persons are vulnerable to mistreatment and should be protected at all cost.

***Julie Aberger** is an EMT instructor and an active member of the **Pennington First Aid Squad**. Julie is also the editor emerita of* The Gold Cross.