

Geriatric Emergencies:

An EMT Teaching Manual

Geriatric Emergencies An EMT Teaching Manual

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MedicAlert developed this teaching manual to address the unique care needs of the geriatric patient. Written by leading authorities on geriatric emergencies, this manual will help instructors teach their students how to correctly assess and care for elderly patients during emergencies.

MedicAlert, a nonprofit membership organization founded in 1956 by a physician and his wife, is the nation's leading 24-hour emergency medical information service. The MedicAlert emblem, worn as a bracelet or necklace, alerts emergency responders to the medical conditions, medications, and allergies of the wearer. It is also engraved with a phone number to call for further information at the MedicAlert 24 Hour Emergency Response Center. There, nurses and trained medical personnel are available to provide the patient's key medical facts from their MedicAlert Electronic Health Record and relay it to the emergency care provider by phone or FAX. Medical conditions, medications taken (including dosages) physician contact, and medical device information are some of the types of information provided. MedicAlert also provides a family notification service that imparts peace of mind to family members knowing that they will be contacted and united in case of an emergency.

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INTRODUCTION

Geriatric Emergencies: An EMT Teaching Manual

Geriatric Emergencies: An EMT Teaching Manual was developed for practicing pre-hospital care providers to address the unique emergency care needs of elderly patients. The elderly, defined in this text as persons above the age of 65, are the most frequent users of emergency medical care. They have a higher severity of illness, and greater morbidity and mortality than younger persons. They are also the fastest growing segment of the U.S. population, comprising one of every eight individuals in the nation today, according to the Administration on Aging. This age group continues to increase daily due to the aging of the baby boomer generation, the 75 million people born between 1946 and 1964.

How does this affect the pre hospital care provider? As these 'boomers' grow older and their incidences of medical conditions increase, the occurrence of emergency medical events rises as well. Therefore EMS providers will spend a majority of their time caring for elderly patients. It is clearly imperative that EMS providers be primed to administer to the special needs of this unique group in the most expedient way possible.

To do your job well, you need to know how to care for elderly patients. Failure to understand the special needs and different disease presentations of this age group could result in mistaken assessment and even the death of the patient. Learn these skills well and you will be better able to serve the large majority of your patients. It is hoped that the 2004 Edition of *Geriatric Emergencies: An EMT Teaching Manual* will provide you with vital information that will help you to help your elderly patients during your career.

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Chapter 1

APPROACH TO THE ELDERLY PATIENT

Barbara K. Richardson, MD, FACEP

OBJECTIVES

- Discuss the increasing importance of the elder patient in your work.
- Understand the difference between physiologic aging and illness.
- List the elements of the scene survey which may impact hospital disposition.
- Define a sentinel event.
- Discuss important factors related to age in the resuscitation and pain
- Management of your older patient.
- Discuss the teaching points of the case study.

INTRODUCTION

True or False:

- The number of older patients is declining.
- All old people eventually become demented.
- Complaints of older patients are often exaggerated.
- There is nothing we can do for old people.

Persons over 65 years currently represent greater than 13% of the population. In the 1990's, a multicenter study demonstrated that 15% of nearly 100 million Emergency Department (ED) visits were made by elder patients, and that these patients were more likely to be brought in by ambulance, consume more ED resources, have serious illness or injury, and require surgery or admission. The percentage of older patients is projected to increase over the next decade with 25% of ED visits generated by this age group by 2020.

Dementia is NOT a normal part of aging, although for every year a person ages, their risk of dementia increases. Progressive significant decline in cognitive functioning occurs in only 30% of community dwelling patients over 85 years of age. The primary cause of this decline is due mainly to Alzheimer's or vascular dementias. The number of people with dementia approaches 50% in nursing home patients. It is significant that even in nursing homes; half the older patients are NOT demented.

Our bodies change with age. Therefore, physiologic functioning and the symptoms of disease can be different in older patients than in younger adults. With each decade that passes, these differences are more likely to occur and can be more dramatic. For example, acute myocardial infarction and systemic infections in the older patient may have less classic presentations than in the young. In the oldest old, the only symptoms of many serious diseases may be simple weakness. The astute pre-hospital provider must be aware of this dramatic alteration in the symptoms of disease with aging. This will keep you from missing serious problems. In the older patient, disease presentations are different and harder to identify.

Additionally, as we age, the common complaints of chest pain, shortness of breath, trauma, abdominal pain, altered mental status, fever, weakness and dizziness/syncope frequently are due to more serious underlying pathology. If a symptom can be due to something minor or something severe, the young have a greater chance of it being the minor thing, while the older patients have a greater chance of it being serious. Table 1-1 lists major organ systems which undergo physiologic aging and some of their clinical correlates.

Both the different or vague symptoms of disease and the higher likelihood of serious disease from any symptom happen due to the physiologic changes that occur with aging. The aging body loses function of each major organ system with time. Older kidneys and livers do not filter as much waste, older hearts cannot pump as hard or as fast, older lungs cannot deliver as much oxygen. Excluding disease, this physiologic decline or loss of function may not even be noticeable to the person. In other individuals, it may diminish the ability to be as active as they desire. However, in most instances it makes a person less able to tolerate disease, illness or other physical stressors. This is known as a loss of **physiologic reserve**.

A good example of physiologic reserve is that a young person may have an entire lung or kidney removed. They can continue to function without any change. However, an older person may lose some lung function with pneumonia, or kidney function with a kidney stone, and they may not be able to walk due to shortness of breath, or may develop kidney failure.

Cardiac output in response to exercise, a key marker of physiologic function, normally declines at a rate of 1% per year after age 30. This is known as "the 1% rule." The influence of genetics, nutrition, environment and prior disease may give you both a different starting point, or alter the speed of the decline. Regardless of where each individual begins, advancing age reduces the resilience of the body to respond to disease or trauma. This decline in cardiac function is why many older people cannot exercise as vigorously as younger people, even if they are in good health.

As the first health care provider on the scene, the paramedic is in a key position to identify the acute problem and establish the patient's baseline level of function. If the patient is stable, this baseline should be determined by whatever means possible. This may mean speaking to the patient, family members or home attendant. In order to obtain this baseline level, ask about memory problems, ability to ambulate, communicate, and perform self-care. These functions are otherwise known as activities of daily living (ADL's). You should seek to identify significant problems with vision, hearing or speech.

**TABLE 1-1
PHYSIOLOGIC AGING AND CLINICAL CORRELATES**

Physiologic Change	Clinical Problem that May Result
Altered Temperature Controls from Hypothalamus Dysfunction	Heatstroke or Hypothermia
Decreased Sweating and Skin Changes	Inability to Develop a Fever When Sick
Loss of Skin Collagen/Elastin	Wrinkles Easier Skin Breakdown More Skin Infections
Lean Body Mass Replaced by Fat	Prolonged Action of Fat-Absorbed Drugs Such as Benzodiazepines and Barbiturates Causing Altered Mental Status Diabetes CAD
<i>Fluid Volume Changes</i> Altered Thirst GI Disorders	Dehydration Electrolyte Disturbances
Diuretic Use	Dehydration, Electrolyte Problems, Volume Depletion, Dizziness Orthostatic Changes
<i>Cardiovascular</i> Decreased Contractility Coronary Artery Disease Conduction System Abnormalities Reduced Postural Reflexes	Congestive Heart Failure Acute Coronary Syndromes Dysrhythmias, Atrial Fib, Heart Block Dizziness and Syncope Falls
<i>CNS</i> Decreased Brain Mass Adherent Dura	More Intracranial Bleeds More Subdural than Epidural Hematomas
Neuronal Transmitter Decrease	Sensitivity to Antipsychotic Meds Parkinsonian Rigidity and Spasticity Depression
Reduced Hearing, Sight, Smell;	Falls and Motor Vehicle Collisions
Gait Instability, Sluggish Reflexes Declining Immune Function	Higher Risk of Infection with Bacteria; the Most Common Infections are: Pneumonia, Urinary Tract, Skin Infections Less Symptoms with Infectious Diseases Cause Later Presentation

APPROACH TO THE ELDER PATIENT

Scene Survey

While assessing the scene for potential harm to the rescuer, take note of environmental, historical or physical evidence of an UNSAFE situation for the elder patient. Some examples follow:

Inability to Care for Self	Stove on while not cooking, lack of heat in winter, no food in kitchen, very poor patient hygiene, wearing excessive clothing in hot weather.
Drug Abuse	Excessive alcohol use may contribute to dizziness and falls; suicide attempts are increased among drug using/alcohol abusing elders.
Polypharmacy	Multiple medications without evidence of adequate knowledge for proper use or supervision of use.
Elder Abuse or Neglect	Note excessive friction between elder and caregiver; delay to care post-trauma or illness, poor hygiene despite caregiver; multiple bruises on patient.

Primary and Secondary Surveys Address Need for Resuscitation

Attention to airway, breathing and circulation form the basic approach to emergency care at any age. Special considerations follow:

In a patient who appears to be terminally ill, inquiry regarding preexisting **advance directives** (living will, DNR) should be made to reduce the likelihood of an unwanted resuscitation. If the answer is not immediately available, rescuers should proceed in favor of resuscitation. Follow the guidelines of your EMS system.

Airway	Loose dentures should be removed if they obstruct airway or impair formation of a tight seal when bag valve mask is needed. Place an oral/nasal airway if patient is unconscious.
Breathing	When using bag valve mask to support breathing, deliver lower tidal volumes (e.g. 500-600 cc) 7-8cc/kg. This avoids gastric distention which may impair ventilation or promote vomiting.
C-spine	Limited mobility of the C-spine, spinal curvature and bony prominences require extra care and padding in the application of cervical collars and back board immobilization.
Circulation	Correct hand placement for chest compression is paramount, as rib fractures are common with compression in the frail older patient.

Defibrillation	RAPID identification and defibrillation of pulse less ventricular tachycardia or fibrillation guarantees the best chance for survival. Avoid placing paddles or pads over palpable pacemakers or internally implanted defibrillators.
Disability	Use the AVPU (alert, voice, pain, none) system to describe responsiveness, and assess orientation to person, place and time. Consider the Cincinnati Stroke Scale , a simple tool to screen for acute stroke. Other stroke scales can be used as per your individual system. Any NEW facial asymmetry (ask patient to smile), change in speech, or upper extremity drift when arms are extended and eyes closed is suggestive of stroke. Follow your systems guidelines for stroke scales.
Exposure	Head-to-toe assessment via history, inspection and palpation in trauma is essential to identify all injuries. Splint obvious fractures to reduce pain. Attention to thermal adjustment (fans, sprays, ice vs. blankets) during transport for patients with altered mental status due to heatstroke or hypothermia is warranted depending upon available resources and local regulations.
Glucose	Diabetes is common in the older patient; exclude treat hypoglycemia in all patients with acute change in mental status or behavior.
Hypotension	Hypotension may reflect problems with <u>the volume</u> (dehydration, bleeding, sepsis), <u>the pump</u> (depressed left ventricular function from CHF), <u>or the heart rate</u> (too fast or too slow). In the absence of overt CHF, a fluid bolus is indicated.
Pain	Acknowledge and treat severe pain with low doses of parenteral narcotics as per regional guidelines. Splinting injured extremities significantly reduces pain.

Communication Issues and Data Gathering

1. Speak clearly and directly to the patient; identify yourself and your plan of action.
2. Use the patient's title such as Mr., Mrs., Ms. or Dr., and address them by name. Avoid
3. Terms of endearment such as Dear, Granny or Sweetie.
4. Be aware of barriers to communication such as difficulty hearing or difficulty speaking that prevent patients from answering back.
5. Know that you can communicate a lot with calm manner, a smile, and a gentle touch.
6. Ask about time of onset of symptoms, triggering events such as dizziness, chest pain, shortness of breath or headache, and presence of pain.

7. Some community-dwelling elders will be worried about a loss of independence and may refuse transport or minimize complaints. Reinforce the value of a medical evaluation to reverse, exclude or improve the condition. If the patient continues to refuse, contact medical control for further instructions.
8. Look for MedicAlert emblems. Ask permission to bring medication bottles which will assist the hospital in identifying the health care provider, drugs and dosages, new and duplicate medications.
9. When appropriate, ask for presence of advance directives.

Selected Time Sensitive Emergencies

The older the patient, the more likely they will require ambulance transport when accident or serious illness occurs. Initial stabilization and rapid transport benefit for time sensitive interventions in MI, stroke and trauma, and in functional recovery in acute abdomen and infection.

TABLE 1-2
TIME SENSITIVE EMERGENCIES

Condition	Outcome
Acute CVA	Reduction in disability from major stroke if fibrinolytic therapy, e.g., tPA can be administered within 3 hours of onset of symptoms.
Acute MI	Reduced morbidity/mortality from ST segment elevation MI if reperfusion can be restored via PTCA or fibrinolysis, if within 6 hours; PTCA preferred if available.
Multiple Trauma	Rapid transport of elder to trauma center favors recovery due to aggressive early management.
Pneumonia	Early institution of antibiotics enhances recovery.
Surgical Abdomen	Elder patients have higher incidence of surgical abdomen including cholecystitis, bowel obstruction, mesenteric ischemia, aortic disruption and appendicitis. Early operation reduces likelihood of perforation, and peritonitis.

Learn to Identify Sentinel Events in Elders

A **sentinel event** is an adverse occurrence which signals more serious underlying issues. For example, syncope could be the first warning of a previously undiagnosed ventricular arrhythmia or cardiomyopathy. Recurrent ED visits for poorly controlled diabetes may indicate problems with a caregiver (elder abuse or neglect) or worsening vision (diabetic retinopathy) on the part of a previously compliant patient.

Examples of sentinel events are:

- Syncope
- Falls
- Sudden Pain
- Sudden Trouble Breathing

Your task is to identify a complaint or problem as a sentinel event and thereby not miss the serious problem that caused it.

CASE STUDY 1

Case Presentation

You are called to the apartment of Mr. Blue, a 75-year-old male who has not been seen by his neighbor for two days. This morning she called him but no one answered. She rang the doorbell and heard a cry for help. You find the patient on the floor in the living room. He is unable to get up. The patient is awake and alert, and says, "Don't bother with me." You immediately soften your approach. You slow down, gently touch his shoulder, and speak quietly. In this way you are able to discover that the patient does not know how long ago he fell but he remembers watching a certain TV show (which you determine was on about 12 hours ago). After the show, he got up to go to the kitchen but never made it. He denies any clear precipitant for his fall such as chest pain, shortness of breath, headache or dizziness.

His PMH includes hypertension, arthritis, and high cholesterol. He has no history of CAD, stroke or seizures.

Vital Signs: BP 100/60, Pulse 120, Resp. 18 unlabored.

There is no tactile fever. Your initial exam of Mr. Blue reveals he is alert. His speech is clear. He has a large laceration on his left forehead with dried blood in his hair. You notice a number of empty liquor bottles lying about. At this point you ask him how much he was drinking last night and he replies, "Not enough." Further physical exam shows evidence of urinary incontinence and a shortened and externally rotated left hip which is painful to palpation. He moves all extremities equally except the left leg. You quickly check function in the left foot and note it is pink and warm and he wiggles his toes on command. His lungs are clear and heart sounds are regular, though somewhat rapid. His abdomen is soft and non-tender. His Glasgow Coma Score is 15.

You have already established a timeline. Now you need to learn the patient's baseline level of function. You find out from the neighbor that she has been trying to check on him every day since his wife died three weeks ago. However, she has not seen him in two days. Mr. Blue has been a healthy, active neighbor for more than 10 years. He was the primary caregiver for his wife until she died of cancer.

Assessment

Pre-fall problems in this case include syncope, seizure, drunken fall or simple trip and fall. It would be a mistake to accept the, "I just tripped" excuse. MI is less likely; however, you should ask about a history of chest pressure or other such symptoms. Stroke is not likely, but again you should inquire about focal weakness or speech difficulties and look for a new neurological deficit. History from the neighbor suggests a prior high level of independent function. This helps you to establish the baseline and the change from baseline.

The post-fall problems include trauma to the head and hip. You must consider C-spine precautions and head injury as well as hemorrhage into the hip.

The patient's inability to clearly recall the event favors a loss of consciousness. You know that loss of consciousness could be either a pre-fall or post-fall issue. He could have passed out from several possible factors such as his drinking, or from heart problems, or from stroke. Alternatively, he could have passed out after the fall as a result of head injury. In any event, the loss of consciousness is a sentinel event that requires attention. His failure to get up after the fall is another issue. You correctly classify this as the third sentinel event. In this case, the hip injury seems a likely reason for inability to rise. Additionally, you know prolonged time on the floor can cause complications.

Treatment

Airway and breathing are well maintained. You apply supplemental oxygen via nasal cannula. Turning your attention to circulation, you note that a BP of 100/60 in a man with history of hypertension can be serious. Importantly, in your focused physical you see his fingers show 3 sec cap refill. He is cool to touch. You secure an IV in the right antecubital fossa and administer NS a 500cc bolus. The cardiac monitor reveals sinus tachycardia.

The forehead laceration, fall and distracting injury (hip) may make it impossible to rule out potential neck trauma." While your gloved partner maintains in-line neck stabilization, you decide to place a cervical collar and splint the left lower extremity, then transfer Mr. Blue to a back board. You pad the board with a blanket. He has been on the floor for more than 12 hours without access to food or drink. You note reddened skin at the pressure points. Fortunately, there is no skin breakdown yet. You add extra padding to prevent further injury to these areas from the back board. You also immobilize the hip. This helps his pain.

You obtain permission to administer Morphine; 2 mg IV is given. A useful rule in analgesics in elders is to start with low doses and titrate to relief, to avoid over-sedation. The ride to the hospital is uneventful. The patient appears to be more comfortable. He tells you he was happily married for 52 years. He greatly misses his wife who was his life's focus following his retirement.

What other information would be useful to the ED staff?

After signing over the patient to the ED staff, you are completing the paperwork when you remember your first impression and the neighbor's words. "By the way, doc, the neighbor said this guy used to be very active and independent. He took care of his wife who died three weeks ago of cancer. Now she hardly ever sees him come out of the house. There were several empty bottles of scotch lying around..."

Case Summary

This is a trauma case, but as you will learn in the “Falls” chapter, every fall is a sentinel event. Falls have a possible medical cause (i.e. syncope). Every fall should be thought of in two ways: What was the possible medical cause of the fall, and what trauma resulted after the fall?

You identified no airway or breathing issues and noted the shock state. The patient had hypotension and tachycardia possibly due to dehydration, pain, or blood loss from suspected hip fracture.

You correctly treated the tachycardia and hypotension as shock with a fluid bolus. Additionally, you know pain can cause tachycardia so your attention to pain treated not only the pain itself, but the agitation, fear and tachycardia that result.

You correctly initiated C-spine protection due to head trauma and distracting injury. As in all elders, you used appropriate pads to prevent backboard-induced skin breakdown. Your taping the legs together immobilized the hip to help decrease pain during transfer and transport.

You identified the hidden triggers/sentinel events. This patient appears to be drinking heavily since the death of his wife. You are aware that elder men have a very high suicide risk. This risk is increased with the recent loss of a loved one. The incidence of depression understandably increases when those who were lifelong support friends and family die, leaving one increasingly isolated. You are also aware that many older patients may have problems with alcohol abuse. The combination of depression and alcohol abuse can sometimes be fatal. You bring these two important points to the attention of the emergency physician. You know the patient was previously healthy, and independent in all aspects of daily living. You noted no significant comorbidities. These are other important facts you bring to the physician. You have laid out every important fact of the case.

Outcome

Your treatment hit every one of the critical actions required to correctly stabilize this patient.

- Provide supplemental O₂
- Ensure monitoring to find dysrhythmias.
- Fluid resuscitation for shock.
- Cover head laceration to prevent further bleeding or infection. Splint extremity and apply ice to the area to control pain, limit further injury and hematoma formation.
- Request Morphine for pain management. Reassure the patient all will be well.
- Use backboard collar and backboard pads to prevent C-spine complications and skin breakdown.

In addition, you discovered that this patient had situational depression and new alcoholism. The patient had no serious head trauma, but did have a displaced intertrochanteric hip fracture. He was scheduled for immediate surgery. However, your identification of his depression and new alcoholism enabled aggressive treatment of these conditions. After two months, the patient was able to return to independent living.

Congratulations if you identified these issues correctly! Your competent and compassionate care has helped to maximize his chances for recovery!

CONCLUSION

The numbers of patients over age 65 requiring EMS assistance is growing every year. By the year 2020 these patients will make up the majority of runs serviced by prehospital providers. It is critical for every prehospital provider to have the specialized knowledge to optimize care for this group of patients. You need to understand how the older patient is different than their younger counterpart. You need to know how to identify sentinel events appropriately. You should recognize how the older person's physiology alters disease presentations in order to perform an accurate assessment of their illness and render appropriate care. Your communication to the patient should be tailored to meet the special needs of this population. Your report to ED staff should identify the critical elements prehospital providers can gather to maximize older patient care.

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Chapter 2

ADVANCE DIRECTIVES AND THE PREHOSPITAL PROVIDER

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OBJECTIVES

- Learn the different types of advance directives and know how to apply them appropriately.
- Understand the meaning of advance directives and how they relate to patient care.
- Understand the advance directive legal issues surrounding difficult patient and family situations.
- Provide the pre-hospital worker a decision-making mechanism regarding resuscitative care.
- Discuss the teaching points of the case study.

INTRODUCTION

Emergency Medical Technicians (EMT's) must be able to make appropriate ethical and clinical decisions while caring for patients. **Advance Directives** (AD's) are legally recognized instructions made by patients or their **surrogates** to direct the actions of health care providers. These directives inform providers of patient desires. Directives may ask providers NOT to initiate certain life-saving measures. In these cases, the provider must understand the ethical and legal ramifications of either initiating or withholding treatment. EMT's are frequently faced with the need to determine the patient's **resuscitative status** or their wishes for care when patients are unable to speak for themselves.

One of the founding principles of medical ethics is autonomy, or the right to self-determination. This means that in general, health care providers honor a patient's ability to make their own decisions and guide their own medical care. The patient has the right to make decisions regarding their health care. Accordingly, patients may accept or refuse any recommended medical treatment.' The right to self-determination may not always be clear-cut. Questions may

arise regarding patient competence; meaning, is the patient legally able to make a free or informed choice?

Competence

Competence is a legal term which can only be decided in court. Every pre-hospital provider should know the factors to look for that will determine a person's ability to self-determination. You should always document if a patient is oriented to person, place, and time, and if the patient seems to be making sense. This can be established by their responses to questions and their medical history. Does the patient have a history of dementia or other mental disorder? Are responses to your questions appropriate? Is the patient clear and coherent? Is the patient confused? Is the patient having hallucinations or delusions? In your documentation, you should always note orientation, and responses to questions. Be sure you always document both positive and negative findings. If any question arises regarding the ability of the patient to make medical decisions, you can defend how you established this fact for yourself. If you based your actions on the above assessment and document your findings, then you can protect yourself should any questions arise.

In an emergency setting, AD's should not be implemented without consulting the patient, unless the patient lacks decision-making capacity. This is in keeping with the concept behind AD's - respect for the patient as an individual and their ability to make decisions for themselves. To determine if the patient has capacity for decision-making, the EMT should ensure that the patient understands the following:

1. the treatment options,
2. the consequences of acting on various options, and
3. the risks and benefits of these options in relation to the patient's values.

You must be careful to document all three of these in the setting where competence may be disputed. Remember that if a patient is in disagreement with the EMT's or physician's recommendation, this is not reason to declare the patient incompetent.

If the patient cannot communicate or is disoriented, what is the right of the family or of other individuals present to speak on that patient's behalf? The EMT must be able to appropriately sift through this confusing set of facts in order to act in the best interest of the patient. This is especially challenging in settings where a long-term relationship with the patient does not exist and the time to make a decision is relatively short.

Discussion of AD's can be complex and frustrating both for patients, their families, and EMT's. Frequently, there are conflicts between patient wishes, family choices, and caregiver recommendations. Patients range from those with well thought out, discussed, and detailed documentation of their medical wishes, to those with no plans, previous discussions, or foresight into the issue. In the medically unstable patient, AD's, or the lack thereof, may present a difficult challenge to the EMT attempting to provide appropriate and ethical care.

AD's have evolved over the last 15 to 20 years and have been formalized in the medical and legal arena. The competent EMT must understand these directives and be able to choose the right course in spite of the conflict and confusion that often surrounds end-of-life issues.

Types of Advance Directives

AD's are usually written, but can be verbally conveyed. Patients use multiple mechanisms, both standard and non-standard, to express their wishes. The four most common standard forms of AD's encountered by the EMT are the **durable power of attorney for health care, the living will, the pre-hospital advance directive (PHAD), and the general "Do Not- Resuscitate (DNR) order"**. Other common names for AD's are in Table 2-1.

A **durable power of attorney for healthcare** is a legal document that names a given individual as the patient's **surrogate** to make health care decisions for the patient if and when the patient is unable to make these decisions. This directive automatically goes into effect when the patient becomes incompetent or incapacitated. A durable power of attorney does NOT require the patient to be terminally ill. The durable power of attorney is potentially the most flexible of the AD's. Surrogates can receive and process information for patients and make decisions for them despite unusual or unexpected events.

TABLE 2-1
SYNONYMOUS NAMES FOR DIFFERENT TYPES OF ADVANCE DIRECTIVES

Pre-hospital Advance Directives	Living Will
Pre-hospital Do-Not-Resuscitate Order	Instructional Directive
Cardiopulmonary (CPR) Directive	End-of-Life Care Preferences
Physician Order for Life Sustaining Treatment	Do-Not-Resuscitate Orders
Pre-hospital Medical Care Directive	No CPR
Power of Attorney for Health Care	Do Not Attempt Resuscitation (DNAR)
Proxy Directives	Limitation of Treatment Order
Medical Power of Attorney	Comfort Care
Surrogate Decision Maker	Comfort One
Health Care Proxy	Out-of-Hospital DNR
Attorney in Fact	EMS DNR Order Durable

Occasionally, the designated person or surrogate may be a guardian appointed by the courts. Some state statutes also contain hierarchical lists of individuals who can assume the surrogate role if a patient needs a health care decision-maker but has not designated one. In the event where no documentation exists, the provider should know if their state automatically appoints the spouse to speak on the patient's behalf. The provider should know who the law recognizes if two family members disagree regarding care. Does your state designate adult children ahead of or behind the patient's siblings? If two siblings disagree, who is legally in charge? Find out who your state designates and in what order.

Living wills are legally recognized documents, which delineate the patient's wishes regarding their medical care should they become permanently incapacitated or terminally ill and unable to speak for themselves. Generally, a living will conveys those health care interventions the patient wants, or more commonly, does not want, in specific medical situations. It specifies the patient's desire to have or to withhold any life-sustaining measures, including nutrition and hydration. The living will requires the patient be terminally ill, in a coma, or on life support before it can go into effect.¹⁵ However, the living will may frequently apply in emergency situations to guide surrogate decision-makers. Living wills do NOT give the surrogate the ability to change with changing situations. They are very specific instructions. For the surrogate to faithfully execute a living will, they must do what the patient designated even if the surrogate disagrees with the patient's designated action. Ideally, a durable power of attorney for health care and a living will

are executed together so that the surrogate is given both specific directions about the patient's preferences, yet has the ability to change as the situation changes.

The **pre-hospital advance directive** (PHAD) represents the third form of AD. PHAD's allow patients or their surrogate to express their desire for care in the prehospital setting. PHAD's are standardized forms, designed to be easily recognized, usually with uniform color, language, and layout within individual jurisdictions. They are meant to prevent EMS providers from beginning unwanted resuscitative efforts. Most of these documents are designed to be initiated and used by adult patients with known "terminal" illness; although depending on state laws, this is not always the case.

For EMT's, the PHAD is the most valuable of advance directives. For EMT's, in many states, the PHAD is the only advance directive that is legally recognized as valid in the pre-hospital care setting. Prior to the 1990's, Emergency Medical Services (EMS) were legally required to resuscitate all patients they were called to assist even if the patient was terminally ill and did not want to be resuscitated."

A modification of the PHAD that exists in some states is a **pre-hospital do-not-resuscitate** (DNR) order. These are valid, legal directives expressing the preference of the patient or, if the patient is incapacitated, the proxy's preference for no heroic lifesaving measures. The patient may initiate a PHAD; however, only the patient's physician may initiate a prehospital DNR order after consultation with the patient or proxy. The prehospital DNR is then given to patients to keep in their possession.

The fourth variation of written AD is the general DNR order. This represents the patient's physician's interpretation of the patient's wishes. This directive is usually derived from AD's the patient or a surrogate decision-maker has written. The patient's physician theoretically initiates this after discussion with the patient or proxy. However, general DNR orders may be initiated unilaterally based on the physician's interpretation of the patient's preferences. If the patient is incapacitated, the proxy may withhold heroic measures to save the patient's life without prior discussion with the patient.

TABLE 2-2
FORMS OF TREATMENT COMMONLY ADDRESSED IN A DNR ORDER

Cardiac Resuscitation	Surgery/invasive Diagnostic Tests
Mechanical Respiration	Chemotherapy/Radiation
Nutrition/Hydration	Pain Medication
Blood /Blood Products	Do Not Hospitalize
Antibiotics	Resuscitative Drugs
Dialysis	Palliative Care

Originally, DNR orders restricted ONLY cardiopulmonary resuscitation in the event of a cardiac arrest. Currently, other elements of medical care may be addressed, such as transfer to a critical care unit, use of intubation and mechanical ventilation, use of vasoactive medications such as Dopamine or Atropine, and invasive cardiac monitoring (see Table 2-2). However, DNR orders clearly allow and may even require the administration of comfort care measures. Comfort care measures include all things that will ease pain and suffering without necessarily prolonging life. This includes pain medication, treatment of agitation or fear, keeping someone warm and comfortable, and other measures as appropriate.

Even in the event of DNR orders, the provider MUST still attend to patient comfort and attempt to ease pain. DNR does NOT mean do not treat. It is imperative that you still act as the protector of your DNR patient. You may make a real difference to someone or to their family by allowing death with dignity, yet without pain and suffering.

EMT's commonly encounter the DNR order in transfers from the hospital setting, to and from nursing homes, and for hospice patients. In certain states, they are also used for homebound patients. Usually DNR orders written in a certain setting, like a hospital, are required to be rewritten and confirmed if the patient is transferred to a different setting. These requirements vary from state to state and add to the confusion pre-hospital providers feel. A certain order may be valid in one setting but not in another. In these circumstances, seek guidance from medical control, follow what you think is ethical and document the facts you used to make your assessment.

AD's have state-to-state variability. Not all states recognize every type, but in general, AD's help health care professionals care for patients according to the patient's predetermined preferences. You should become familiar with your specific state regulations.

Current Pre-hospital Experience with AD's

American Medical Response (AMR), the largest pre-hospital care provider in California, performed a study looking at 273,095 ambulance responses in nine California counties. They found that 34% of their calls were for patients over 64 years. However, only 0.6% of these elderly patients had a reported terminal illness and only 0.3% had known AD's.

Only 48% of the elders with DNR AD's were alert at the scene, as compared with 87% of non DNR elders who are alert. Among the DNR group, 21 % were considered "critical" in the field.

This study showed that there are BLS treatment differences according to terminal illness and DNR status. Only 27% of terminally ill elders received oxygen as opposed to 52% of DNR elders. However, the DNR group was 28 times more likely to receive an airway than the terminally ill group. The DNR group was 61 times more likely to receive bag-valve-mask ventilation than the terminally ill group. Finally, 6% of DNR elders did in fact receive CPR.

The study showed that there are ALS treatment differences according to terminal illness and DNR status. Only 14% of the terminal illness group received ALS procedures, while 56% of DNR elders received ALS care and 61 % of regular elders received ALS care. The DNRALS care included cardiac monitoring in 54%, pulse oximetry in 28%, serum glucose in 17%, peripheral [V's in 23% and 11% received medications. Of the terminal illness group, 13% had cardiac monitoring, 9.4% had pulse oxymetry, 4.3% had a glucose check, 6.2% received a peripheral, [V, and only 0.4% had any medication administered.

It is very disturbing that over half of the terminal illness patients do not have known AD's. This may put the pre-hospital provider in a difficult position, since the people most likely to need DNR orders clear[ly have not addressed this issue. Finally, it is clear from this data that DNR patients use more airway resources than the regular elderly. We are providing care to DNR patients. Therefore the fear that making someone a DNR means they will not receive emergency care is wrong.

This should be an incentive to physicians and patients everywhere to ensure that patients with terminal illness address the issue of AD's right away. One excellent method of documenting AD's is through MedicAlert. MedicAlert stores AD's for individuals. A single call to MedicAlert can give the pre-hospital provider all the specific information on an individual's AD any time, day or night, 24/7. The use of this resource could facilitate use of AD's and enhance the quality of care we deliver to our patients.

Problem Areas for the Field

All forms of AD's may be problematic for EMS. EMT's commonly encounter different types of AD's in the field, ranging from standard written forms to nonstandard formats or simple verbal expression of the patient's wishes by others. In the perfect world, EMS would only be activated when standard treatment was wanted and on arrival, it would be clear what to do. This, however, is not reality. Sometimes patients and families have difficulty when death is imminent. Families may panic or be unsure of what to do at the time of death. Families may inadvertently activate the EMS system. They may activate EMS not wanting resuscitation, but simply needing immediate comfort care measures or transport to the hospital for additional comfort care measures.

AD's in the pre-hospital setting are difficult for multiple reasons. An ongoing relationship with the patient is usually absent, evaluating patient competency may be difficult, time pressures can be intense, and the environment can be public and noisy. Seriously ill patients may be unable to participate in a discussion of their desires for care, medical records may be unavailable, surrogate decision-makers may be absent, or the patient's doctor may be unavailable or unaware of the patient's wishes.

Even when the patient has executed an AD, this may be of little help to EMT's. Many times AD's are stored in a safety deposit box at the bank or on file in their lawyer's office. Even when readily available, AD's are not written to be user-friendly for the EMT's. There are multiple designs making it difficult to find the information you need. Most AD's can be several pages long and use legal jargon, which makes interpretation difficult.

Controversial Areas

Ideally, EMS should resuscitate all patients who desire and would benefit from medical intervention. Further, we should never resuscitate competent patients who do not desire or would not benefit from this care. However, patients' wishes are frequently unknown and the benefits of resuscitation are difficult to predict. Studies show that approximately 10% of EMS cardiac arrest runs involve terminally ill patients. Additionally, in 7% of pre-hospital situations technically requiring resuscitation, the resuscitations are unwanted.

EMT's know they are required to respond to life-threatening injuries or illness with immediate stabilizing intervention. The time constraints necessary to perform a successful resuscitation require speedy patient assessment, quick inquiry and decision regarding desire for resuscitation, and obtaining of immediate consent for treatment. Therefore, EMT's follow a common rule: treat first and ask legal questions later. The concept of implied consent supports this action. Legally, implied consent means that because EMS has been called, the care EMS typically renders is wanted and should be rendered. This concept of implied consent allows EMT's to act in emergency situations in which a patient is unable to physically consent but in which the average person would expect assistance.

EMT's have been trained to interpret PHAD's and understand when these instructions are legally valid in the pre-hospital setting. They also are familiar with other types of AD's. However, EMT's may not have time to interpret the desires expressed. If PHAD protocols are not in place, incapacitated patients may be transported against their will to an emergency department after the initiation of resuscitative care.

Ethics and Advance Directives

AD's are based on two fundamental ethical principles that have been used to guide patient care. These principles are autonomy and beneficence. Beneficence refers to doing good, and in health care, this means to restore health and relieve suffering. Traditionally, beneficence has been interpreted as providing care directed toward recovery and prevention of complications. However, beneficence also includes the withdrawal or withholding of treatment based on the assessment of benefit versus burden." This benefit-burden assessment means that if the person would have to endure too much suffering in order to gain very little benefit, they would refuse the care. A good example of this is a terminal patient forced to live in pain on a ventilator when there is no hope they will ever survive.

PHAD's recognize patients' or their surrogates' right to set limits on the scope of resuscitative efforts. Prior to most states passing PHAD legislation, there was a potential conflict between the expressed wishes of the patient and the legally mandated duty for EMS to resuscitate patients. In some states, prosecutors threatened legal action against EMT's who did not attempt to resuscitate all patients with acute life-threatening problems, irrespective of the existence of a terminal diagnosis.

Ethically, EMT's need to communicate with patients or their surrogate when possible. Do-Not-Resuscitate (DNR) does NOT mean do not take care of the patient. It is important to note that all patients, even residents of extended care facilities, have a right to EMS treatment and transport for medical problems such as fevers, pneumonia, dehydration, lacerations, fractures, dyspnea or pain. In the absence of a valid PHAD, EMT's should proceed with all pre-hospital care that is medically indicated or ordered by medical control.

How to Make the Tough Decisions

There will always be situations which arise that are not covered by protocol, state law, or for which the EMT has not already developed a plan of action. K.V. Iserson has described an approach to ethical problems when a decision must be made very quickly. The EMT should apply three tests; The **Impartiality Test**, the **Universalizability Test** and the **Interpersonal Justifiability Test**.

In the **Impartiality Test**, EMT's must decide if he/she would want the same care if they were in the patient's situation. In the **Universalizability Test**, EMT's must determine whether all EMT's would act in a similar way in relatively similar circumstances. In the **Interpersonal Justifiability Test**, EMT's must be able to justify their actions to other health care providers. Can the EMT give reasons to other healthcare providers that would make them understand their actions?

If all three tests can be answered positively, the EMT may be assured that what they plan to do or not do falls within the scope of ethically acceptable actions (see Table 2-3). However, legally, EMT's should still follow their protocol state laws.

TABLE 2-3

ETHICAL DECISION MAKING

The Impartiality Test:

If you were in the patient's situation, would you want this action performed?

The Universalizability Test:

Would any/all other EMT's act in the same way in this situation?

The Interpersonal Justifiability Test:

Can you supply good reasons to other EMT's for your actions?

Competent Patients with Advance Directives

Remember, AD's are used when you cannot communicate effectively with patients, or their surrogates. For competent patients who have AD's or their AD status is unknown, it is recommended that medics follow a routine approach. First, if it appears relevant, ask the patient or their surrogate decision-maker the patient's care/resuscitation status. Second, only then use the paperwork as a guideline. If it is unclear what to do, consider following your standard protocol. Sometimes there is over-reliance on the "paperwork" and too little discussion with the patient or surrogate about the care choices they have. Talk to your patients and their families. Make sure you understand the meaning of the paperwork. Always use medical control to assist in decision-making.

CASE STUDY 2

Case Presentation

You are called to the home of a 76-year-old man for trouble breathing. The man has a history of emphysema and lung cancer. His cancer has spread to the superior vena cava, causing swelling of the face and neck. He is now undergoing radiation treatments to help relieve the swelling. Last week the patient signed a DNR order which states "no intubation or mechanical ventilation." His family says the doctors told them he has only days to live. They say he wanted to die at home with his family.

The son, who states he is medical power of attorney called EMS-911. He and several other family members cannot stand to see the patient die like this. The son says, "He is suffocating and suffering. Look at the way he is gasping for breath! No one should die like this. You have to do something!"

You look at the patient. His face and head are a deep violet color. His face, head and neck are grossly swollen. His eyes are bulging out. He is panting, tongue protruding. He is clutching at the edge of a bedside table and in obvious distress. He looks at you when you address him but he cannot speak and is not acknowledging your questions at all. He reaches out and grasps your shirt front in his fingers and shakes it weakly around. Momentarily he looks you in the eye with clear panic on his face. Medications: Prednisone, Ativan, Prozac, Vasotec and Lasix. Allergies: Penicillin.

Physical Exam

Vital Signs: BP 176/98, Pulse 136, Resp. 54 and labored, Pulse

oxymetry 65% while on 100% oxygen by mask.

Airway: There is no sign of foreign body. He can swallow his own secretions and has a gag reflex.

Breathing: He is breathing 54 times a minute and using accessory muscles of respiration. Lung sounds have coarse rales throughout. There is good air entry bilaterally.

Circulation: His face and head and neck are a deep violet color and very swollen. His hands are dusky. Below the nipple line he is less purple in color. His capillary refill is 2 seconds. He appears well-hydrated. There is no sign of bleeding. His heart rate is 136 with clear heart sounds. The monitor shows a sinus tachycardia. His right upper chest has a green target drawn on in marker at the site of radiation treatments.

His neurological exam is as described above. He moves all extremities well.

The remaining exam is normal.

Assessment

1. What is your impression of this patient?
2. Does this patient have decision-making capacity?
3. If the patient does not have current decision-making capacity, must you follow his AD?
4. If the patient does have decision-making capacity, can he/she verbally rescind a written and executed AD?
5. What role does any family play in directing your efforts?
6. What role does the son who states he has medical power of attorney play in directing your efforts?
7. Do you think it is correct to leave this man to die at home with his family as they tell you he wanted?
8. Do you think it is correct to intubate this man?
9. What is your role in directing the family? What information should you offer?
10. Do you have an opinion on his situation? What if anything is your obligation to direct the family in the care of the patient?
11. What is your responsibility to the patient?

You contact medical control for assistance. They ask you to ask the son if he wishes to rescind the do-not-intubate order. The son says no, but you need to do something to help his father. You tell the family that their father will likely die because he cannot get oxygen to his body despite breathing so hard. If you cannot intubate him, what can you do?

Option #1:

You discuss with the family that you can see their father is clearly suffering. You tell them that at the hospital they may be able to give him medication to make him more comfortable. You say that if he were your father that is what you would do.

You attempt to bag the patient, he struggles but you are able to increase his saturation to 80%. You administer 4 mg of Valium. The patient stops struggling and saturation improves to 85%. However, his spontaneous respirations are slowing and he is more dependent on bagging. You contact medical control and tell them you are on route with the patient and will support ventilation by bagging.

Option #2:

You discuss with the family that their father is clearly suffering. You tell them that you are afraid of administering any medication that may make him stop breathing. You tell them that at the hospital they may be able to give him medication to make him more comfortable. You tell them you have to hurry and get him to the emergency room. The son consents to transport. You contact medical control and tell them you are on route with the patient.

Option #3:

You discuss with the family that their father is dying. You state that death is sometimes painful. You say that at the hospital they will not be able to save his life. You encourage them to follow their father's wishes so as not to prolong his pain. You ask them to sign a refusal for transport.

Case Summary

As health care professionals we all have an opinion of how care should be given at the end of life. We all balance our own ideal of "right" with our patient's desires and their family wishes. We all subtly or overtly direct the actions of our patients and their families. In each of the three options above, each provider directs the patient's care to what he/she feels is right.

It is important to note that DNR does not mean do not provide care. Option #3 fails to address the current level of suffering this man is experiencing. It also fails to help the family who want "something" to help their father. As a medical professional, you need to consider all your responsibilities but keep your patient paramount. While it is true the hospital will likely not be able to save his life, they can do some things to ease his suffering. The hospital can provide comfort care measures that this man cannot get in his home setting. While hospital treatment may prolong his life, the comfort measures he needs will certainly help relieve his pain and suffering. Leaving the patient at home in this situation is abandonment.

Option #2 is the cautious way. It does address suffering by transport to a higher level of care. It does not risk worsening respiratory status with medications. It shares the decision making with the family by asking them permission to transport.

Option #1 relieves patient suffering immediately by administration of a sedative. It does increase risk because the medication itself may cause respiratory arrest. This is the risk/reward decision. In this case, the provider believed the reward of easing suffering outweighed the risk of respiratory arrest. Was this his/her call? Is this a **benefit versus burden** decision which should

be made by the patient and/or family? Could inclusion of the family in this decision have helped? Was there time for this inclusion? Didn't the family already express these wishes?

Outcome

Option #1: On arrival to the hospital, the patient is awake and lying reclined on the cart. However, he is breathing only 8 times per minute. You are assisting respirations with bagging. The patient's oxygen saturation is 88%. You explain to the emergency physician that you administered 4 mg of Valium for relief of extreme agitation and are temporizing airway management by bagging. You feel your medication relieved the extreme situation and with bagging, there is now time for the family and the doctors to decide what to do.

The emergency physician agrees that the patient should not be intubated and instructs staff to continue assessing respirations. He then gathers the family together and calls the private physician. The family is very relieved to see their father calmer. They agree to place the patient on an oxygen mask only. He dies after 20 minutes.

Option #2: You arrive at the emergency department with the patient gasping for air and vomiting. You tell the emergency physician the man is a DNR but the family wants to relieve his pain. The emergency physician administers 2 mg of Morphine, which helps to calm the man. They suction his airway and place him on high flow BIPAP. They begin a Diprivan drip and titrate to where the man is arousable to voice.

Option #3: The man dies at home within the next 2 hours. The family will always remember this as a terrible and painful death. The son consults an attorney to file a lawsuit against you, but they decide it is too much trouble and drop the whole thing. You never hear from them again.

CONCLUSION

As in most of these cases, the "right thing" to do is not always so clear cut. What is clear is that you will certainly be faced with similar situations in your career. It is best to think about your "ideal" response now. In this way, you will think and act more clearly under pressure.

Knowledge of AD's by EMT's will allow them to provide appropriate ethical, as well as sound, clinical decisions for their patients. Not all AD's are valuable in the pre-hospital setting. Standardized and legally recognized PHAD's are the most valuable AD's for the EMT.

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Chapter 3

PAIN MANAGEMENT AND PALLIATIVE CARE

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OBJECTIVES

- Become familiar with drugs commonly used in geriatric pain management.
- Understand the drug interactions and management of their side effects.
- Understand the goals of palliative care.
- Discuss the teaching points of the case study.

INTRODUCTION

As a paramedic, you will undoubtedly encounter elderly patients taking multiple medications. Pain medications are commonly used in the elderly for various conditions such as arthritis. This chapter will focus on those medications used to manage pain in the elderly as well as how to identify and treat the common side effects encountered by their use. We will also discuss the definition of **palliative** care and its significance to your treatment.

THE PAIN MEDICATIONS

Pain medications are often divided into two classifications:

1. **Opioid** pain medication,
2. **Non-Opioid** pain medication,

The reason for this classification is due to the differences in the side effect profiles between these two groups. This chapter will explore the mechanism of action for each group and the common side effects you will encounter with each. Furthermore, it is important to remember that there are multiple pain medication formulations that mix both opioid and non-opioid in a single preparation that are prescribed daily to elderly patients. Therefore, patients unknowingly overdose themselves and may develop one or more of the side effects mentioned below.

1. Opioid Pain Medication

Introduction

Opioid pain medications are all derived from the compound Opium. Opium is a naturally occurring substance produced from the sap of the poppy plant *Papaver somniferum*. It has been used for centuries to control pain and continues to be used today because it is cheap, effective, and can be administered via multiple routes. Included in the over 20 compounds that comprise Opium are Morphine and Codeine. These are the only two known naturally-occurring opioids. All

other opioids used today are either semisynthetic or synthetic. Compounds that are generated from structural alterations of Morphine are the semisynthetic opioids. Compounds generated entirely in a lab are the synthetic opioids. Examples of semisynthetic opioids include Heroin, Hydromorphone, Oxycodone and Oxymorphone. Examples of synthetic opioids include Meperidine, Fentanyl, Methadone, and Propoxyphene.

Mechanism of Action

All of the effects that opioids produce, whether beneficial or detrimental, can be traced to the receptors that they target. Receptors are the section of a cell that allow alteration from a given drug. When opioids interact with mu, kappa, and delta receptors, patients experience **analgesia** and **euphoria**. Analgesia is pain relief, and euphoria is a feeling of joy or well-being. However, when opioids interact with mu receptors, patients will experience the detrimental respiratory, central nervous system (CNS), gastrointestinal (GI), and cardiovascular side effects.

It is important to understand the mechanism of **tolerance** to narcotic medication since this often contributes to the overdose situation. Tolerance is decreased effectiveness of a medication with continued use. As a person chronically takes pain medication, the medication can become less and less effective at relieving the pain. Therefore, patients take more drugs more often to achieve the same level of pain control. Unfortunately, no tolerance develops to the mu effects. Therefore the higher drug levels still have all the bad side effects.

Physical Examination of Patients on Opioids

Patients taking opioids for pain relief will hopefully only experience their analgesic effects. Unfortunately, improper dosing, drug-drug interactions, changes in liver or kidney function, or changes in absorption within the GI tract cause patients to receive a larger than intended dose. It is at this time that the detrimental side effects of opioids occur. These include:

1. Respiratory depression ranging from mild hypoventilation to apnea;
2. Gastrointestinal slowing that may produce constipation, nausea, and vomiting;
3. Central nervous system changes that range from agitation and confusion to profound obtundation;
4. **Miosis** (constriction of pupils);
5. Loss of gag reflexes;
6. Seizures;
7. Cardiovascular effects that range from hypotension to dysrhythmias, heart block or cardiac arrest.

Management of Opioid Toxicity

As with any patient you approach, attention to securing the airway should be your first priority. Patients with mild respiratory depression may not need to be intubated, but the patient with severe respiratory depression, cyanosis, obtundation, and loss of gag reflex will require intubation for ventilation and airway protection. If an obtunded patient is unable to give a history,

it is extremely important to ascertain which medication and dose was taken. This may be accomplished by speaking with family members, home health aides, or by obtaining the patient's pill bottles.

As with any comatose patient, you should secure the ABC's and administer the "**coma cocktail**." The components of the coma cocktail will vary according to the particular EMS system. In general, however, Thiamine should precede Glucose, Then, 25g of 50% Glucose is given for anyone who has low or undetermined serum glucose. If there is no response, then 2mg of Naloxone can be initially administered and the amount of Naloxone can be increased to 10 mg of Naloxone (or according to your system's standard medical orders), Naloxone (Narcan) is a pure opioid antagonist. A drug antagonist acts competitively with a drug at the same receptors mentioned above, thereby reversing the effects of the drug. With Naloxone, this reversal is rapid and occurs within one minute of administration. It is easily appreciated in the patient with miosis, as the pupils will widen almost immediately. The duration of action is approximately 20 minutes. Therefore, in cases of severe opioid toxicity with long extrication times, the dose may need to be repeated.

TABLE 3-1
CLASSIFICATION AND CHARACTERISTICS OF OPIOID AGONISTS

	Analgesic Dose *	Duration (h) of Action	Half-life (h)
Natural (Opium)			
Morphine	10.0	4-5	1.4 – 2.4
Codeine	120.00	4-5	2.2 – 3.6
Semisynthetic			
Heroin	5.0	4-5	.5
Hydromorphone	1.3	4-5	2 - 3.0
Oxymorphone	1.0	4-6	2 – 3.0
Oxycodone	10 – 15.0	4-5	-
Synthetic			
Meperidine	75-100.0	2-4	2.4 – 4.0
Methadone	10.0	4-5	24 – 48.0
Fentanyl**	0.125	1	3.3 – 4.1

* An analgesic dose is equatlc 10mg of Morphine administered subcutaneously.

** Fentanyl given intravenously and the active metabolite of meperidine, normeperidine, are known to increase the risk for seizures. These seizures respond to and should be managed with benzodiazepines. e.6)

2. Non-Opioid Pain Medications

There are three major classes of medication used for pain control in this group. They are Acetaminophen, Aspirin, and Non-Steroidal Anti-Inflammatories (NSAID's).

a. Acetaminophen (Tylenol)

The exact mechanism of action for pain control with Acetaminophen is unknown. The major reason it is mentioned here is for one of its potential overdose effects. This potentially lethal side effect is direct liver toxicity (hepatotoxicity). Elderly patients may inadvertently develop toxic levels of Acetaminophen through chronic use or due to the use of combination medications. Medications that blend Acetaminophen with a narcotic are very common. Thus, concomitant Acetaminophen toxicity must always be considered in an elderly person who demonstrates opioid toxicity. The later stages of Acetaminophen toxicity may present with jaundice, obtundation, or coma.

b. Aspirin

The exact mechanism of action that Aspirin provides for pain control is unknown. Aspirin acts by inhibiting prostaglandin synthesis and irreversibly inhibiting platelet aggregation. This latter effect can produce one of Aspirin's more serious side effects, bleeding. Platelet inhibition may cause bleeding anywhere, but most commonly we see gastrointestinal (GI) bleeding. Aspirin toxicity in elderly patients may present like opioid intoxication with agitation and confusion. However, unlike the **hypoventilation** from opioid intoxication, patients with Aspirin toxicity will initially **hyperventilate**. This may help you differentiate which medication is at fault for the patient's symptoms. Once again, it is important to remember that both opioids and Aspirin intoxication may be occurring simultaneously due to combined preparations.

c. Non-Steroidal Anti-Inflammatories (NSAID's)

Ibuprofen and Naproxen are the most common of the older NSAID's. Newer generation NSAID's, such as Rofecoxib and Celecoxib, have recently been introduced and marketed as NSAID's with a safer side effect profile. The exact mechanism of action for pain control is unknown, but like Aspirin, they act to inhibit prostaglandin synthesis. Their most serious side effect is GI bleeding. In fact, it is the danger of GI bleeding that has spawned the new generation of NSAID's mentioned above. These drugs are marketed as less likely to cause a GI bleed. The management of a NSAID-induced GI bleed is the same for any person encountered with an active GI bleed. After assessing the ABC's, the establishment of intravenous access and the administration of fluids should be coupled with a speedy extrication time.

Palliative Care

Patients with terminal conditions are often placed on palliative care. Palliative care is defined as care that is administered only to relieve suffering and not expected to affect a cure of the disease. Palliative care is usually coupled with advance directives. Patients undergoing palliative care carefully weigh the benefit and hardships of any medical care offered. If they decide an intervention is too burdensome, they may decline it. However, if they decide an intervention provides more benefit than burden, they may accept it. It is important for the provider to understand that palliative care does **NOT** mean no care. Additionally, palliative care does not mean the patient wishes to die. In fact, they may want nothing more than to live, but they are aware of the harsh realities and limitations of medical care.

CASE STUDY 3

Case Presentation

You are called to assess a 74-year-old woman who is not responding to her home health care worker's questions and seems to be very sleepy. Upon arrival, you note a thin elderly woman

lying on her bed, unresponsive to questioning. She is unarousable to sternal rubs and has mildly blue (cyanotic) hands and feet. You note that she is breathing on her own at a very slow rate.

The home health care worker states that earlier that morning the patient had taken some pain medication for her back pain. The patient has taken this medication many times without difficulty. This morning she took more than usual because the pain would not go away. The patient's other past medical history includes a recent bowel surgery for obstruction. You ask why the patient has back pain and are surprised that now the caregiver tells you the patient has bowel cancer with cancer "in her back bones".

Due to the history of **metastatic** cancer, you know you have to inquire about resuscitative efforts. The caregiver reports that the patient still wants maximal care and even insisted on the surgery three weeks ago. Upon further questioning, the aide states that she is unaware of any trauma to the patient and there is no history of any recent falls. The caregiver does not know exactly what her medicines are. You ask her if she could find the bottles while you attend to the patient.

Physical Exam

Vital Signs: BP: 112/68 HR: 84 RR: 10

You see a thin, elderly woman unarousable to pain. She moans slightly but does not move her extremities at all. She has a decreased respiratory rate and peripheral cyanosis. She has no outward signs of head or any other bodily trauma. You see a Fentanyl patch on her left shoulder. Her room appears in order and there is no blood at the scene. In your airway evaluation, you check for a gag reflex. It is absent. She doesn't appear to have any airway foreign bodies or obstruction and her breath sounds are equal bilaterally. You notice that her radial pulse is strong. Upon looking at her eyes she does not have spontaneous eye opening. As you pull her upper lids open, her pupils are very small or pinpoint (**miosis**).

Assessment

1. What type of toxicity is this patient demonstrating, and could there be any other explanations for her appearance?
2. What is the patient's Glasgow Coma Score? Why would you calculate this?
3. What type of treatment would you administer and in what order? For what reason?
4. What other information can you gather at the site that would be helpful in determining the reason for this patient's current state?
5. What must you communicate to the emergency department personnel?

Treatment

Your first intervention is to secure the patient's airway, provide supplemental oxygen and assist her ventilation. Her hands and feet become pink as you assist her ventilation. However, she remains unarousable. You then establish intravenous access and administer 100mg of Thiamine followed by 25g of 50% Glucose. There is still no response. You decide to give 2 mg of Naloxone. Before you do so, you alertly remove the narcotic patch and wipe the underlying

skin clean. As you administer the Naloxone, you notice that her pupils begin to dilate slightly. After two minutes, you administer an additional 4 mg of Naloxone. Now she starts to move and open her eyes slightly. She begins to breathe on her own over the assistance you are providing. You are aware that she may need more Naloxone en route since the narcotic effects far outlast the effects of Naloxone. However, the trip to the emergency department is uneventful. Upon arriving, they ask you what the story is concerning this patient. You repeat the above events and hand them the pill bottles you obtained from the caregiver after the patient was stabilized.

Case Summary

This lady has an opioid intoxication that is causing respiratory depression. Other explanations for her appearance include head trauma, other toxicity, stroke, and the many other causes of coma including hypoglycemia.

It is important to rapidly determine that this patient needs to be intubated to protect her airway and provide for better ventilation. Her GCS is 4. It is essential to calculate this even though there is no history of trauma because in this case, calculation of the GCS allows you to determine that intubation is required. Any patient with GCS <8 requires intubation. In addition to the GCS, other evidence indicating a need for intubation are that she has mild cyanosis, and the inability to protect her airway.

The establishment of intravenous access for administration of the coma cocktail is crucial. The patient's response to the Naloxone confirms that she definitely had opioid-induced respiratory depression. You correctly acted before confirming the narcotic ingestion, based on your initial history and physical assessment. She still may have other medication toxicities present. This is why it was important to obtain the patient's medications.

You should review the environment for any other drugs, either prescription or illegal. You should search for signs of fall, neglect or abuse. Cervical spine immobilization should be considered, but cervical spine injury is unlikely due to lack of trauma or fall.

You must communicate to ED personnel that, although suffering from metastatic cancer, the patient would like full resuscitative efforts.

Patient Outcome

This patient had been prescribed 100mg tablets of Meperidine by her surgeon to alleviate post-operative pain. Additionally, her oncologist prescribed the patch for pain from her bony metastatic disease. The patient had begun mixing the pain medications for continued and increased pain. This morning she had taken four tablets instead of her usual one to get relief. The patient may have developed an increased tolerance to narcotics after her recent bowel surgery. All other testing for concomitant medication toxicity was negative. She was admitted to the intensive care unit and remained intubated for two days. Her physicians addressed her pain control more definitively and she was discharged to hospice care.

Alternative Case Development

Assume the case is identical until the point you inquire about resuscitative efforts. At this point the caregiver tells you during the surgery doctors found the cancer "was everywhere." The patient and her doctors decided they would only try to "keep her comfortable." At this

point you ask for the DNR orders and get a fully executed document stating only that no intubation or CPR should be done.

You contact medical control. Everyone agrees that the patient's DNR should be respected. The question is: what care should the patient receive? Due to the near respiratory arrest, you need to act quickly before the patient dies. You decide that simply assisting her respiratory efforts with bagging is acceptable and not a violation of her do not intubate wishes. Now you have bought yourself some time.

Since there are several valid options you may chose in her care, you decide to enlist the assistance of the nearest relative, her daughter. The daughter asks if immediate death is inevitable. You state that right now she can not breathe because of the narcotic effects, but you have a medication that will reverse the overdose. The family gives you permission to administer the Naloxone and transport without intubation to the hospital. The patient responds slightly to the 2 mg dose and after the additional 4 mg, starts breathing 12 times per minute. You place the patient on 100% oxygen by face mask. You elevate her head and suction her mouth to decrease the risk of aspiration.

The entire family comes to the ED to be with the patient. The daughter is very grateful for your outstanding efforts on behalf of her mother. Later that evening the patient dies. Inclusion of the family at the prehospital scene resulted in decisions which allowed the patient to say good-bye and die in the company of those she loved. Your understanding of palliative care and respect for the wishes of the patient and her family allowed the best outcome for all involved.

CONCLUSION

Every paramedic should be familiar with the common medications used for management of pain. It is important to know appropriate doses, as well as common side effects and toxicities. Palliative care is used for patients with untreatable conditions. It brings about relief of pain without attempting to cure the condition. Patients undergoing palliative care mayor may not have DNR status.

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Chapter 4

STROKE IN THE ELDERLY

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OBJECTIVES

- Relate the impact stroke has on the older population.
- Recognize the warning symptoms of stroke.
- List the 14 stroke symptoms described in the text.
- Explain the physical findings that indicate stroke.
- Discuss use of stroke scales in the assessment of a stroke patient
- Describe the barriers of denial, lack of education and fear that exist to prevent early stroke care.
- Understand the critical importance of the timing of symptom onset in determining both diagnosis and treatment of stroke.
- Explain the significance of heart rate, and blood pressure on stroke.
- List the treatment indications and options for heart rate and blood pressure in stroke.
- Discuss the important points presented in the case study.

INTRODUCTION

Stroke is generally a condition of older patients. Over 75% of all strokes occur in people >65 years of age. Every paramedic will certainly see patients with both old and new strokes in their daily work. Cerebrovascular disease was the second leading cause of death worldwide in 1990, killing over 4.3 million people. In the United States the incidence for first-time strokes is more than 400,000 per year.' You may be able to save lives and prevent the devastating disability of a stroke by knowing what to do in the acute stroke. Additionally, thousands of people survive their strokes and must live with the effects of this illness. You will give better care if you understand the concepts in this chapter.

Definition

Stroke is a broad term that includes many things. The definition of stroke is: A dysfunction of the brain caused by a sudden reduction in its blood flow. Strokes can be caused by blood clots, high blood pressure, trauma, drugs, infection or damage to blood vessels. A majority of strokes are caused by a blockage of a blood vessel in the brain. This kind of stroke occurs in 80% of cases. The blockage causes a lack of blood flow which is called an **ischemic stroke**. It is like kinking the garden hose so the flowers in the garden or the cells of the brain die from lack of nutrients. The other type of stroke, which occurs in 20% of cases, is from a rupture of a blood

vessel in the brain. This is called a **hemorrhagic stroke**. A hemorrhagic stroke is like a leaky garden hose. The blood spills out and causes damage in two ways. First, the blood cannot reach the cells at the end of the hose, so they die. Second, because the skull is a solid container, as more and more blood leaks out (and can't drain); more and more pressure builds up within the head. Now **all** the cells of the brain can be damaged, crushed within the skull by the increased pressure. Common causes of hemorrhagic stroke are a ruptured aneurysm and trauma causing a subdural or epidural hematoma.

Symptoms

Symptoms of stroke can be a sudden diminution or complete loss of consciousness. They can be alterations or loss of sensation. This includes feeling (touch, temperature and position sense), seeing, hearing, tasting and smelling. It also includes symptoms of speech as well as weakness or loss of voluntary motion. Understand that stroke symptoms range along a continuum from very minor aberrations of normal function to complete loss of function. Since the functions we are talking about are control of sensation, speech, motion and thought, symptoms can be abnormalities in any of these areas. That's a lot of stuff! Common symptoms of stroke are listed in Table 4-1.

**TABLE 4-1
STROKE SYMPTOMS**

Symptom Name	Definition of Symptom
Hemiparesis	Paralysis of one side of the body.
Monoparesis	Paralysis of one extremity only.
Quadriparesis	Paralysis of all four extremities.
Monocular Blindness	Blindness of one eye.
Binocular Blindness	Blindness of both eyes.
Visual Field Deficits	Visual loss of top, bottom, right, left or center.
Diplopia	Seeing double.
Amaurosis Fugax	A fleeting complete blindness in one eye.
Dysarthria	Difficulty moving/controlling one or more extremity.
Ataxia	Difficulty controlling your balance or walking.
<i>Vertigo</i>	A sense of the room spinning.
Aphasia	Trouble speaking or slurring of speech.
Anomia	Trouble saying or remembering specific words.
Parasthesia	A funny sensation, numb or tingling feeling anywhere.

Strokes are also called cerebrovascular accidents (CVA), stroke syndromes, apoplexy, or brain attacks. When lack of blood flow to the brain is temporary or transient, the stroke can be called a transient ischemic accident (TIA) or a mini-stroke. TIA's are stroke symptoms that last less than 24 hours. So unless the symptoms have already lasted over 24 hours, you may not be able to distinguish a TIA from a stroke. TIA's are rapid in onset; symptoms usually reach their maximal manifestation in fewer than 5 minutes. TIA symptoms typically last 2-15 minutes, with

most TIAs lasting less than one hour. The other way you can know the symptoms are a TIA and not a CVA is when the symptoms have already gone when you answer the call.

A **stroke in evolution** means the stroke is happening right in front of you. This means you are observing as the symptoms evolve or worsen. In these cases, timing to treatment is critical! These patients may benefit from emergent aggressive treatment.

It is very important to identify transient ischemic attacks. This is because TIA's precede nearly 30% of ischemic strokes. The TIA or mini-stroke is a huge warning! If left untreated, one third of TIA's lead to ischemic stroke: 20% within the first month, and 50% within the first year.' However, if people seek medical care after the warning of the TIA, many will never have to suffer the CVA at all. The prevention of CVA after TIA focuses on correcting the cause of the problem and treating it before damage occurs. We can prevent stroke before the devastation of permanent brain injury occurs with awareness and early medical care. Don't let your patients refuse transport because the symptoms "went away." They need care.

It is useful to think of a stroke as a brain attack. Similar to a heart attack, strokes require urgent medical care to assess the need for life-saving treatment. In the past, medicine could not do much to help heart attack patients and the majority died. Today we expect them to be saved with the dozens of new therapies that exist. Right now, stroke has a limited number of current medical interventions. However, we can give clot-busting drugs in stroke and help a lot of people. We have a lot of interventions to prevent stroke by correcting the problems that cause them. Because our ability to care for stroke improves all the time, it is very important for you to identify stroke symptoms and speed transport to lifesaving care.

The biggest challenge in the treatment of stroke today is awareness. People need to understand the symptoms of stroke. They have to know that as soon as symptoms occur, they must call 911 and seek medical help. Stroke is such a terrible disease today because most strokes go completely untreated. The best outcomes occur if treatment can be started within three hours of the first symptom. However, the median time from symptom onset to ED presentation ranges from 4-24 hours in the US.

The barriers to treatments are many. First, many stroke symptoms are ignored or go unrecognized by patients or their caregivers. Additionally, strokes occur while patients are sleeping and are not discovered until the patient wakes. Other barriers to care are that some strokes leave the patient too incapacitated to call for help. Some patients do not get care because they are in denial of the early symptom. Others are uneducated about medicine and don't think anything can be done to help. Still others are afraid of the disease. As we begin to save more and more people through early awareness and treatment, they will learn the disease is not as hopeless as once believed. Awareness starts the ball rolling so soon people may expect us to treat brain attacks as well as we can now treat heart attacks.

History

You need to establish what exact symptoms the person is feeling and when these symptoms began. If the person has existing neurological problems, you must determine baseline. What is old and what is new? In patients who have had prior strokes, this can be a challenge. Obviously you can't tell if a new stroke is happening if you don't know baseline function. Take the time to establish it.

Learn the symptoms of stroke and the terms that describe these symptoms. They are contained in Table 4-1. Be sure to ask specifically if patients are experiencing any loss or change in neurologic functions. Phrase the questions simply and specifically. "Have you had any trouble with your vision?" may be too broad. Ask, "Are you seeing double or do you have any blind spots?" "Do you have any weakness?" may be too broad. Ask, "Do you have any trouble writing or using your hands to button buttons? Do you notice that one arm is weaker than the other or that you have trouble using one leg?"

Be sure you establish timelines. Be as specific as possible. A three-hour time to treatment is very tight. We need to know within a few minutes how long the symptoms have lasted. The difference between TIA's and CVA's should be established. This again requires tight time distinctions.

A **stroke in evolution** is an emergency with special treatment. It is very important to know if new symptoms or worsening symptoms are occurring. Also, if symptoms are improving or disappearing, this may define a TIA. We would not want to give tPA and risk a brain hemorrhage if the patient would just get better without any treatment.

Physical Exam

Your physical exam should focus on neurologic status. You can identify patients for priority treatment by performing a good neurologic exam and understanding the implications of what you find.

Make sure you assess the patient's mental status as the first part of the neurologic evaluation. Are they oriented to person, place, and time? Pay specific attention to their speech. You may need to ask them to repeat phrases to assess this best. Ask them to say: "no ifs, ands or buts" or "she sells sea shells by the seashore." Look for **aphasia**, or the inability to speak. Look for slurring of speech or absence of the ability to say words, which is called **anomia**. Ask patients to name three common objects. Do this by showing them things you are holding such as a pen, a watch, or a coin, without volunteering the name. If they cannot name the object, ask them the function of the object. What does this (the watch) do? They may be able to tell you it tells time. Through these questions, you are assessing their ability to understand as well as their ability to communicate. This is critical in your discussion of treatment options and in knowing their ability to understand your explanations of what you are doing.

Next in your physical examination, assess the cranial nerves. You are looking to see if there is a difference between right and left sides of the face and if there is a loss of function of vision or hearing. You may not need to know the numbering of the nerves in your practice, although this will make you look brilliant. However, you should check the functions listed in order to discover any signs of stroke that exist.

Cranial Nerve Exam:

- II) Optic Nerve - visual acuity and visual fields. Can the patient see you clearly? If there is any question, have them count your fingers covering one eye at a time. Have them read one or two sentences. Ask them to look you straight in the eye as you wiggle a finger in the extreme top, bottom, right and left areas of their face. Are they missing the ability to see in any quadrant?
- (III) Oculomotor, (IV) Trochlear, and (VI) Abducens Nerves

- CN III controls pupillary reactions (pupillary light reflex and accommodation), eyelid elevation, eye movements up, down, and medially.
- CN IV controls eye movement down and in toward nose.
- CN VI controls eye movement laterally toward temporal field (toward the ears).
- CN III, IV, and VI function together to control eye movement.

1. Have the patient follow your finger by moving just their eyes (keeping their head still) as your finger goes right and left, up and down and toward their nose.
2. Check the light reflex. See if the pupils constrict and enlarge.

(V) Trigeminal Nerve - sensation of face, corneal reflex, muscles of mastication (Jaw movement); has both motor and sensory functions.

1. Ask the patient to open his/her mouth as wide as possible.
2. Touch each cheek and ask if the sensation is the same from side to side.

(VII) Facial Nerve - controls facial muscles, supplies taste fibers to the anterior 2/3 of tongue; controls eyelid closure (has both motor and sensory functions).

1. Have patient wrinkle forehead, smile showing teeth, and wink eyes.
2. Note any asymmetrical movement or facial drooping.

(VIII) Auditory, or Acoustic Nerve - controls hearing and sense of balance.

Test gross hearing by holding a watch or rubbing fingers together close to ears. Can they hear this faint sound?

(IX) Glossopharyngeal Nerve and (X) Vagus Nerve - control cough, gag, swallow, articulation, and phonation.

1. Instruct patient to open mouth and say "ahhh."
2. Look for elevation of soft palate and uvula in the midline.
3. Assess gag reflex by stimulating back of pharynx with tongue depressor.
4. Note any difficulties in articulation and/or speech.

(XI) Spinal Accessory Nerve - controls trapezius and sternocleidomastoid muscles, movement of shoulder and head, shoulder shrugging.

1. Have the patient raise both shoulders while you lightly hold the shoulders down.
2. Have the patient turn their head to left and then to right while you lightly hold the chin straight.

(XII) Hypoglossal Nerve - controls tongue movement and strength.

Have the patient stick out their tongue. Normally it should be mid line, note deviation to the right or left. With a little practice, a full cranial nerve exam takes less than one minute to perform. Since you are now aware of what you are looking for, you can note many features of the formal cranial nerve exam when you are simply talking to the patient. You can assess functions when you say "hello" and get a history. Therefore, you don't have to repeat this part again during the physical exam; you are noting it during your history taking - it is done.

Motor Strength:

Examine the strength of all four extremities. Are the hand grasps equal? Do the arms move? Do the legs move? Is the strength equal from side to side? Is the strength normal or weak? Can the patient feel each side? Is the sensation normal and equal on both sides?

Gait and Balance:

The paramedic may be in the best position to see a patient ambulate. Can the patient walk? If possible, observe their walking to the chair or stretcher. Do they have ataxia? Do they drag one leg behind them? Are they able to lift each leg equally?

Implications of the Neurologic Assessment:

Your careful assessment can establish if a stroke is happening. What is the timing of this stroke? Is it a stroke in evolution? If so, get moving, this person needs priority care! Is this a TIA? Is this a CVA? Your assessment may be the key to establishing the exact diagnosis.

Some systems are now utilizing stroke scales. These are checklists of symptoms and signs you find on your initial assessment. They are rapid and reproducible tools for quantifying neurologic deficits in stroke patients and are useful for following the patient's early course. Is the patient getting worse or are they getting better? The answer to this question requires repeat examinations over time. You can shorten the timeline by providing a professional first exam. The exact components of stroke scales can vary. However, the underlying premise of the scale is to establish the need for priority care. The most famous stroke scale is The National Institutes of Health Stroke Scale (NIHSS). Currently, this scale is commonly used to determine a patient's eligibility for use of tPA in the emergency setting.

Emergency Care

First, you must identify that a stroke is happening by your accurate history and physical assessment. Since you know the symptoms of stroke, you know what to ask for and what to look for on your exam.

As with all emergency calls, take care of the ABC's first.

- **Airway and Breathing:** Patients presenting with Glasgow Coma Scale scores less than or equal to 8, rapidly decreasing Glasgow Coma Scale scores, or inadequate airway protection reflexes, require emergent airway control via rapid sequence intubation.
- **Circulation:** In this case, circulation is represented by two vital signs: heart rhythm and blood pressure. These vitals are especially significant in stroke. Atrial fibrillation causes stroke because blood clots form in the malfunctioning atria. Then these clots can be shot out into the circulation as the heart beats. If the clot lodges in a blood vessel, it forms an embolism. The clot now shuts off blood flow to the brain causing an ischemic stroke. Extremely high blood pressure may cause rupture of a blood vessel. Extremely low blood pressure can prevent blood from reaching the brain. In all these cases, it is important for you to identify the problem with vital signs and take appropriate action.
- Ideally, atrial fibrillation should be addressed by converting the rhythm to normal sinus. However, the danger of emboli being shot out to the brain increases as the rhythm

changes from fibrillation to sinus rhythm or back again. Therefore, if the atrial fibrillation has lasted longer than two days, the patient should be anticoagulated (the blood clots thinned out) before the rhythm is changed.

- Extremely high hypertension should be lowered according to SMO's. Stroke in extreme hypertension is called hypertensive encephalopathy. This is a type of hypertensive crisis that may require a Nitroprusside or Nipride drip. Nitroglycerin can be useful, but is a second line agent in this setting. Beta blockers may also be useful, especially if the heart rate is fast. However, Beta blockers are also second line agents in the treatment of hypertension associated with stroke.
- Hypotension should be treated according to SMO's. Start with a fluid bolus in the field.

CASE STUDY 4

Case Presentation

You are called to the home of a 72 - year-old man with complaint of a burn to his left arm and trouble breathing. On arrival, you find a man sitting on a kitchen chair, very agitated. A wet towel covers his left arm. He states that he was cooking bacon for breakfast and his shirt caught on fire. He put it out by sticking his arm under the kitchen faucet. He did inhale smoke but it was only for "a minute." His breathing feels fine now. He would like something for pain because his arm hurts a lot.

PMH: Stroke four years ago leaving him with some weakness of the left leg, for which he uses a cane. He has had high blood pressure for many years. He has had an irregular heartbeat on and off and takes this white pill to fix it.

Meds: Lopressor, Digoxin

Allergies: None

Physical Exam

Vital Signs: BP 184/96, P 98 and irregular, R 18, Pulse ox is 94%

You place the monitor and note an atrial fibrillation in the mid 90's. He is awake and alert and speaking clearly. He is in no respiratory distress. As you talk to him, you notice he is not looking at you straight on. Even though you are standing directly in front of him, his head is turned so you can only see the right side of his face. You lean over to see his entire face and it appears normal.

His heart is irregular. His lung and abdominal exams are normal.

He has a large blistering burn over his left forearm from the dorsal hand to the elbow. It is **circumferential** (going all the way around the arm) for about a five-inch area near the wrist. He has good but irregular pulses at the wrist and cap refill is <2 seconds. His fingers are not burned and sensation is normal.

You look at his eyes and the pupils are normal. You ask him to look at your finger with his eyes. He follows your movements up, down and right but as you move your finger to the left, he turns his entire head to follow it. You ask him to look straight in your eyes as you wiggle your right and left hands by the right and left sides of his face. "Tell me when you see my hand move" you say. He does not say anything as you move your right hand by the left side of his face. He easily identifies your left hand moving.

You check his strength in all extremities and the left leg is slightly weak. He reports this is the same as it has been since his stroke.

Assessment

1. What is your impression of this case so far?
2. What are your treatment priorities?
3. Do you need to treat the heart rhythm in the field?
4. What critical questions do you need to ask?
5. What is the patient's baseline neurologic function?
6. What is his current neurologic function?
7. What would you say if the man only wanted his burn treated and refused transport?

Patient Outcome

The patient is not concerned that he could not see your hand on his left side. In fact, he did not notice the lack of vision until just now and is not sure when this began. He says he is sure it will get better soon. "Don't worry about it. It went away last time it happened." You push to know how long this has been happening and how many times it occurred. The patient reports it has happened "once or twice before." You ask how long these episodes have lasted and the patient says "a little while" which you clarify to be about four or five hours in duration.

You wrap the burn in sterile gauze, elevate the arm and apply ice packs over the dressings. You administer 2 mg of Morphine for pain and transport to the hospital.

At the hospital, you point out that he is in atrial fibrillation and has visual field loss on the left. You note that he had this before and these were probably TIA's. The doctor agrees and adds that he probably caught his shirt on fire because he could not see it as he was cooking. They confirm the atrial fibrillation and believe this caused a stroke affecting his vision. Because you detected the visual field loss, the patient is expedited to the stroke protocol instead of being treated as a simple burn. Since no one is sure of the exact time of visual loss, they decide not to consider administering tPA. In the next few hours the patient's vision comes back to normal.

Case Summary

This case illustrates several important points. First, you were very astute to notice the strange way the patient was looking at you. He had turned his head because he could not see things to his left. He was compensating for the blind spot without knowing why. By doing a complete cranial nerve exam, you identified a current visual field loss, which meant the patient was having a new TIA or CVA. This led you to the correct impression of a recent CVA.

The critical questions that must be asked are those that define the neurologic symptoms and establish the timing. The patient had several episodes of neurologic problems and had ignored the warning signs. You correctly identified the history of TIA's. You tried to establish the timing of the problem to see if the patient was within the golden three hours for tPA administration.

You noted the weakness of his left leg and correctly established that this was the patient's baseline and not a new deficit. If this were new, it would change the score on this man's stroke scale which may mean he gets different treatment. The new changes are the visual field defects.

Your treatment priorities are to stabilize the patient so no deterioration occurs. If his heart rate created an unstable situation, it should be treated in the field. However, his heart rate is normal (the rhythm is not) and his circulation is stable. He is tolerating the atrial fibrillation. This man had very high risk of stroke because he had an irregular heartbeat that started and stopped sporadically. Emboli from his heart got shot out into the brain as the rhythm changed. In general, you should not convert this rhythm to sinus rhythm without thinning the blood first due to risk of causing another stroke. Since the rate is not out of control, you do not have to act emergently to correct it.

If the man had only wanted treatment for the burn, you would have needed to educate him about stroke symptoms and the importance of treatment. First, you would have understood the fear and denial people can experience in these situations and attempted to overcome it with education, understanding, and if those fail, scaring the heck out of him. If he still refused treatment, you would have to establish competency and have him sign a refusal. While you clear the refusal through medical control, it would be possible to have the doctor take one last try to convince him to come in for care.

Congratulations on your outstanding assessment and treatment of this case.

You expedited the patient's care so he had the best chance of neurologic recovery.

CONCLUSION

Stroke is an illness of dramatic proportion. Stroke care is evolving so some patients can experience recovery from their symptoms. It is critical to know the indications and priorities for the treatment of heart rate and rhythm, blood pressure, and neurologic symptoms. The timing of symptoms determines if they are a TIA or a CVA. The timing of symptoms and the establishment of a stroke scale are critical to the treatment options available for your patients. Know how to conduct a complete stroke history and physical so you can optimize patient care.

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Chapter 5

MYOCARDIAL ISCHEMIA / INFARCTION, SHORTNESS OF BREATH

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OBJECTIVES

- Be aware of the various presentations that signal acute myocardial ischemia/infarction and how they change with aging.
- Learn the risk factors of myocardial ischemia/infarction.
- Learn that securing a patient's past medical history helps determine the many causes of shortness of breath.
- Learn the importance of accurate assessment and how it affects appropriate treatment.
- Discuss the teaching points of the case study.

INTRODUCTION

1. Myocardial Ischemia/Infarction

Every prehospital care provider becomes familiar with the classic symptoms of **myocardial infarction**. Any patient presenting with crushing chest pain, shortness of breath, and **diaphoresis** will be assumed to have a myocardial infarction. Elderly patients, however, rarely exhibit these classic symptoms. You need to be aware of the variant presentations possible in elderly patients.

Elderly patients have a fourfold increase in mortality compared with younger adults with myocardial infarction. There are many reasons for the severe rise in mortality.

- Vague or absent symptoms;
- Delay in seeking treatment (usually caused by the vague symptoms);
- The number of pacemaker cells in the sinus node decrease with age, increasing risk of sinus node dysfunction, so the patients have more sinus arrests/asystole;
- Collagen fiber changes reduce ventricular compliance; Cardiac output is therefore diminished, so the patients have weaker hearts to start with and the damage is less easily tolerated;
- A loss of myocardial fibers and increase in elastic tissue leads to conduction problems and increased risk of dysrhythmias like ventricular tachycardia;

- Loss of cardiac adrenergic receptors makes elderly myocardium less sensitive to natural and pharmacologic catecholamines.

Because of the mortality with MI patients, you must be aware of the various presentations they can have. Know them and treat the patient seriously.

Presenting Symptoms of Myocardial Infarction in the Elderly

1. Dyspnea

This is the feeling that the patient cannot get enough air. About 75% of elderly patients will have dyspnea as a symptom of myocardial ischemia. This may occur alone or with a feeling of weakness. Chest pain may also occur but is found in a minority of cases. Often the patient can give a history of exertional dyspnea progressing to non-exertional dyspnea. Because dyspnea can occur with many disease processes, it may not necessarily be cardiac-induced. However, always consider MI as your first cause of dyspnea. **Assume that the worst possible cause is responsible for your patient's symptom until proven otherwise.** This approach saves a lot of lives.

2. Confusion/Mental Status Change

Confusion can be a sign of decreased blood flow to the brain, secondary to a MI. If this is the case, search for other signs of poor **cardiac output**, such as hypotension or **congestive heart failure**. These other findings will strengthen the evidence of MI. Also search for other causes of confusion such as drugs or dementia. If there is strong evidence for these problems, then MI comes down on your list of probable diagnoses for this symptom.

3. Syncope

The cardiac causes of syncope are very dangerous. Myocardial ischemia can cause dysrhythmias that result in sudden syncope. As the heartbeat becomes irregular, the pumping of blood out of the heart is compromised. As the cardiac output fails, blood does not get to the brain and the patient faints (has syncope). If these dysrhythmias are sustained for even a few minutes, they can cause death. Outflow obstruction from damaged heart valve results in syncope. Decrease in cardiac output for a damaged heart muscle if sustained or extensive can cause syncope. This may also cause death.

4. Weakness

Silent myocardial ischemia (ischemia without chest pain) often results in a strong sensation of weakness. Intermittent periods of weakness should be considered as the equivalent of angina pain in an elderly patient. Profound sudden generalized weakness may be the only symptom of a MI.

Weakness is a vague complaint and may be the result of a huge number of different problems. Remember; always assume that the worst possible condition that can cause the patient's symptoms is responsible. Unless you have evidence that the weakness is from something else, consider it may be from a cardiac cause and ALS the patient.

5. Congestive Heart Failure (CHF) or Pulmonary Edema

Both of these problems are the result of poor cardiac output. If the heart cannot beat strongly, then blood cannot flow easily out of the lungs and through the heart. This causes accumulation of fluid in the lungs, which is called **congestive heart failure**. **Pulmonary edema** is the extreme and sometimes fatal stage of congestive heart failure. Whenever a patient presents with either condition, you must act as if a **MI** precipitated this problem.

Whatever the cause of the congestive heart failure or pulmonary edema, both of these conditions cause the beginning of a vicious cycle that **MUST BE STOPPED**. As fluid builds up in the lungs, the patient gets less and less oxygen with each breath. This makes the heart pump faster and harder to circulate oxygenated blood to the body. As the heart pumps harder, the heart muscle needs even more oxygen, which makes the heart beat even faster. Then it needs even more oxygen.

This means that if your patient has not already had a heart attack, the fact that the heart is working so hard puts the patient at very high risk of having their myocardial infarction right before your eyes.

Treatment

1. Oxygen

Establish O₂ at a rate proportionate to your patient's level of distress. Be prepared to intubate for pulmonary edema or decreased consciousness.

2. Cardiac Monitoring

Assess for a serious dysrhythmia and treat according to ALS protocol.

3. Blood Pressure

Blood pressure should be controlled to acceptable limits. Do not go by actual numbers. Treat blood pressure symptomatically. If the number is low, but the patient seems fine, treat with small 200 cc boluses. If the number is low and the patient is unconscious, then push rapid fluids and think about drug treatment such as Dopamine/Dobutamine.

a. Hypertension

If the patient's pressure is dramatically high, consider nitrates, calcium channel blockers, or Lasix to reduce it slowly and carefully. Again, go by symptoms. More severe symptoms require more aggressive treatment.

b. Hypotension

Always a poor finding. If the patient is not in failure or pulmonary edema, push IV fluids. When fluid bolus is contra-indicated, consider Dopamine/Dobutamine.

4. Congestive Heart Failure/Pulmonary Edema

Treat per your standing medical orders. Oxygen/intubation, monitor, IV's. Give Lasix, Nitroglycerin, and Morphine as blood pressure allows. These conditions should be treated aggressively to prevent cardiac damage.

Elderly patients may have a heart attack and never have any chest pain. Be aware of and familiar with the common presenting symptoms of myocardial infarction in older patients.

Risk Factors

There are six major risk factors for myocardial infarction. Always ask patients if they have any of these risk factors. The more they have, the more seriously you should consider them as a heart attack victim.

1. Previous Myocardial Infarction

If patients have had a prior heart attack, then you know that heart disease is there. Check if the patient's present symptoms are similar to the symptoms experienced with the prior heart attacks. Just because the symptoms are different does not mean they are not signaling a new heart attack. Depending on what part of the heart the heart attack is in, the symptoms can be different. So, change in symptoms may mean that the heart attack is now in a different area of the heart.

2. Angina

Angina pectoris is a pain felt by patients that represents ischemia (lack of oxygen/blood flow to the heart). Think of angina as the first step on the road to a heart attack. If the angina lasts long enough, then it does become a full-blown heart attack. Angina is usually a pressure or a tight or heavy sensation in the chest. Patients will say, "I don't have chest pain; I have a tight feeling." Classically, the patient will say, "It feels like there's someone standing on my chest." This sensation may also be felt in the neck, jaw, or back. There may also be an aching or numbness in the inner part of the arm; more often in the left arm, but it can be in the right arm or in both arms together. These symptoms classically get worse with activity and better with rest. Pain at rest is more serious.

3. Diabetes

Patients with diabetes, either on insulin or not, are at high risk for heart attacks. These people often have damage to the nerves around the heart and are at high risk for a heart attack without ever feeling chest pain at all. This is silent ischemia or a silent myocardial infarction. Elderly people are also at risk for heart attacks without chest pain. Therefore, diabetic elderly people are at double risk for heart attack without chest pain.

4. Hypertension

The longer a patient has had high blood pressure and the worse the high blood pressure, (either the higher the numbers or the more drugs it takes to keep it down), the higher the risk for heart attack.

5. High Cholesterol

The higher the cholesterol level and the longer it has been high, the higher the risk of heart attacks. This is because the cholesterol deposits in the lining of the arteries cause less and less blood flow to the muscle of the heart.

6. Smoking

The more packs smoked a day and the more years of smoking, the higher the risk of heart attack.

The following case study illustrates specific points made in this chapter.

CASE STUDY 5-1

Case Presentation

Prehospital care providers are called to the home of a 73-year-old man. His wife reports that he is having a heart attack. You arrive to see an elderly gentleman in severe distress. The patient is lying on the ground gasping, eyes open, diaphoretic, and extremely cyanotic.

Physical Exam

You see a cyanotic, diaphoretic male in extreme distress. The patient is unable to speak due to shortness of breath and grabs for your arm and shirt as you approach. He nods yes when you ask if he has chest pain.

Vital Signs: BP: 80/palp, P: 160, R: 40s, labored and gasping

Heart: The pulse shows a rapid regular tachycardia with pauses. When you listen to the heart by stethoscope, the heart sounds are very obscured by harsh breath sounds.

Lungs: Diffuse rales throughout with expiratory wheezing.

Neck: Positive JVD.

Extremities: Cyanotic, cold, some leg edema, fingers with clubbing, and nicotine stains to first three digits of right hand.

The patient's wife is obviously distraught. She reports her husband had a heart attack last year, but has seemed to be fine since. He does have hypertension and takes his pill daily. She denies any other medical problem. He still smokes three packs a day and has been weak and short of breath for two or three days. He has been mostly in his armchair during that time and has barely eaten. She says he never complained of any chest pain.

You tell his wife that he is critically ill and needs to be treated immediately and taken to the hospital. She is crying and reports that he never wanted to be a vegetable. She knows he would not want that. You ask if he ever made out a Living Will or anything like that. She says no.

Assessment

1. What is going on with this patient?

2. What symptoms does he have which suggest acute MI?
3. Prioritize your treatment - what does he need first?
4. Do you have consent to give ALS care?
5. Is the patient competent?
6. Does his wife have the ability to refuse care for this man?

Treatment

You immediately begin 100% O₂ by mask and place the patient on the monitor which shows a sinus tachycardia rate 166 with frequent unifocal PVC's. You initiate an IV. At this time the patient becomes less responsive and develops ventricular fibrillation.

You follow ALS protocol, defibrillate the patient, intubate, and give Epinephrine and Amiodarone. The patient converts to a sinus tachycardia; you transport him to the nearest hospital. His wife, now hysterical, is brought to the emergency department by a neighbor.

Patient Outcome

The patient arrives in the emergency department in a sinus tachycardia with full-blown cardiogenic shock. His EKG shows an inferior wall myocardial infarction. His wife becomes very difficult with the emergency department staff. She threatens legal action because she knows that her husband does not want this. Since it is two in the morning, the hospital legal department is at home sleeping, and the patient is admitted to CCU. A cardiologist is on the way.

Three days later, the patient is extubated and ultimately recovers with moderately diminished functioning due to diminished cardiac output. You hear from the hospital grapevine that he later divorced his wife for trying to "pull the plug,"

Case Summary

This case was a very obvious myocardial infarction. Think of what your impression would have been if they had called two days earlier. At that time, the patient's symptoms were: weak and short of breath for two to three days, mostly in his armchair, and had barely eaten. These vague symptoms are common presentations of myocardial ischemia in the elderly. Sometimes the only complaint in these people is weakness.

Review the five common presenting symptoms of Myocardial Infarction in the elderly.

- 1, Dyspnea/Shortness of Breath
- 2, Confusion/Mental Status Change
- 3, Syncope
- 4, Weakness
- 5, Congestive Heart Failure/Pulmonary Edema

Maintain a high degree of suspicion in all elderly patients. The less sure you are of the possibility of a heart attack, the more history you need. Check for the six major risk factors.

1. Previous Myocardial Infarction
2. Angina
3. Diabetes
4. Hypertension
5. High Cholesterol
6. Smoking

The more risk factors present in your patient, the more seriously you need to consider heart attack as the cause of that person's problems.

2. Shortness of Breath (SOB)

Shortness of breath or dyspnea is not a medical diagnosis; it is only a symptom. However, it is such a common problem among the elderly population, think of it as a category in itself.

The Most Common Causes of Shortness of Breath Are:

1. Chronic Obstructive Pulmonary Disease (COPD/Asthma)
2. CHF/Pulmonary Edema
3. Myocardial Ischemia/infarction
4. Pneumonia
5. Carcinoma of the Lung
6. Pulmonary Embolism

Although your basic management starts with oxygen in all cases, you must narrow the assessment down to give further treatment. In the field, you do not want to give a breathing treatment to someone with potential myocardial ischemia. Giving these Beta-agonists will increase the demand and work of the heart. This can cause a heart attack in susceptible patients. Therefore, you do not want to give this treatment to patients with ischemia, infarction, CHF, or pulmonary edema. Making the right assessment is important in these patients. How do you decide what is causing the shortness of breath?

History

One of the most useful questions to answer in these patients is: What is the past medical history? Although we are all taught that past medical history should be asked late in the course of your history taking, it can be helpful to move just one or two questions up very early in your history. You don't want to know that patient's entire medical problem list, but you do need to know if they have lung or heart problems. Ask this quickly and specifically.

Generally, if the patient has a history of emphysema, then their SOB today is probably emphysema. If they have had CHF ten times before, then they probably have CHF now. These two problems can look almost identical and be very hard to distinguish in certain patients. Prior history helps you decide which is which.

Also, quickly review the patient's medication list. If an Albuterol inhaler is listed, then the patient more than likely has a history of emphysema. However, if the patient takes Lasix every day, then CHF is more likely the cause of the presenting symptoms. Difficulty arises when the patient uses an inhaler AND takes Lasix. At this point you have to rely more on your history and physical exam.

Know the classic history and physical symptoms of COPD/asthma, CHF, myocardial ischemia, and pneumonia. Once you think your patient fits into one impression, and then check off points that fit into the standard history and physical exam of each disease process. If your data all fit, then your impression is secure.

**TABLE 5-1
SOB HISTORY**

	CHF/Pulmonary Edema	MI	COPD	Pneumonia
SOB	+	+	+	+
Cough	-/+	-	Early Morning	+
Sputum	Pink & Frothy	-	Clear	Yellow Green
Fever	-	-	-	+
Chills	-	-	-	+/-
Sweats	+ Cold & Clammy	+ Cold & Clammy	-	+Hot
Chest Pain Presence	-	+/-	-	+/-
Chest Pain Character	-	Heavy, Tight, Character	-	Sharp Pleuritic
Chest Pain Duration	-	Exertional on/off	-	Gradually Worsening, then Constant
Smoking	+ Risk	+Risk	Almost Always	+/-
Hypertension		+Risk	+Risk	--

**TABLE 5-2
SOB PHYSICAL EXAM**

	CHF/Pulmonary Edema	MI	COPD	Pneumonia
Diaphoreses	+	+	+	+
Cyanosis	-	-	+	+/-
Clubbing	-	-	+	-
Air Entry To Lungs	Good Upper Worsening at base	Good	Poor	Patchy
Wheezing	+/-	-	Must have some air entry to breathe	+/- Patchy
Rales	+	With CHF Otherwise Clear	-	+Patchy
Fever	-	-	-	+
BP	Is a risk factor if severe symptoms	Is a risk factor if severe symptoms	Usually Unaffected	Usually Unaffected

Physical Exam

Upon further questioning, you find that the patient has had this condition since last night. He replies that when he gets up to walk, he has a heavy, constant pain in his sternum that lasts a couple of hours at a time. The last time he has felt pain like this was with his last heart attack.

As you are talking, you put on the cardiac monitor, which shows a sinus tachycardia with ST elevation. You also find that the patient used to be a smoker, but quit after his heart attack (he has only had one). He replies that he does not have any lung problems but does have a slight cough, which produces white frothy sputum. When asked if he has a fever, Mr. Jones replies no. The patient takes Nitropatch, Procardia, and one Aspirin a day.

Vital Signs: BP: 240/112 P: 130 R: 40s, labored

Temperature: Normal

Color: Blue

Diaphoresis: Yes

Appearance: Gasping for air and uncomfortable.

Lung Sounds: Rales in bases (or could be clear).

JVD: Maybe yes, maybe no.

Peripheral Edema: Maybe yes, maybe no.

Clubbing: No

Cyanosis: Yes

Assessment

1. What is your impression of this scenario?
2. What is the significance of the man's blood pressure? Temperature? History? Lung exam?
3. What is the significance of JVD and peripheral edema?
4. What would your treatment be?

Treatment

- Should the patient get Nitroglycerin? Lasix?
- Should the patient get a breathing treatment?
- Should the patient get intubated?

Patient Outcome

You give a Nitroglycerin sublingual. The patient's BP comes down a little, as does his chest pain. You repeat this twice and finally he says the pain is gone. His BP is 180/96. If he had rales, JVD and peripheral edema, then you also gave 40 mg of Lasix IVP. You slow his IV to TKO. At the hospital he was found to have a heart attack. If he had rales, JVD, and peripheral edema, then he also would have congestive heart failure.

Case Summary

This patient had precordial heavy chest pain that is classic for myocardial infarction. If he had had jaw pain or arm pain, this would be classic, too. Add these questions to your list. Absence of chest pain, however, does not rule out myocardial infarction from your impressions.

His shortness of breath went along with his chest pain. In less severe cases, see if the two are associated; if he also gets weak, has difficulty breathing, or has chest pain while walking, the symptoms are exertional.

This man may or may not have heart failure together with his other symptoms. Rales in the lungs can be heart failure. In this case they will be in both lungs. The rales start at the bases and get higher and higher in the chest as the patient gets sicker. Rhonchi are a sign of pneumonia, but in pneumonia, they are heard in one area of the chest only. His symptoms also progressed rather quickly, which is classic for heart-related shortness of breath.

SCENARIO B

Case Presentaion

Mr. Jones called 911 because he cannot breathe. He is panting as he speaks and can only get out one word at a time. He must take several breaths between each word. You note that he is sweating profusely and that his lips and fingers are blue. The patient is put on high flow oxygen by mask.

Physical Exam

Upon further questioning, you find that the patient has had this condition for the past two days. You ask if the patient is experiencing any pain and he responds no. As you are talking, you put on the cardiac monitor, which shows sinus tachycardia. You start an IV. As you initiate the IV, you notice a MedicAlert emblem, which indicates EMPHYSEMA. The patient also has a cough that produces clear sputum every morning. He doesn't have a fever and hasn't had any heart problems; however, the patient does have emphysema. He's been a smoker for more than 30 years. The patient takes inhalers and Prednisone.

Vital Signs: BP: 188/96 P:130 irregular R: 40s, labored

Temperature: Normal

Color: Blue

Diaphoresis: Yes

Appearance: Gaspig for air and uncomfortable.

Lung Sounds: Poor air entry throughout and wheezing.

JVD: No

Peripheral

Edema: No

Clubbing: Yes

Cyanosis: Yes

Assessment

1. What is your impression of this scenario?
2. What is the significance of the man's blood pressure? Temperature? History? Lung exam?
3. What is the significance of JVD and peripheral edema?
4. What would your treatment be?

Treatment

- Should the patient get Nitroglycerin? Lasix?
- Should the patient get a breathing treatment?
- Should the patient be intubated?

Patient Outcome

You give the patient an inhaled Beta-agonist treatment and transport. At the hospital, they continue these treatments and he slowly gets better.

Case Summary

This patient's trouble with breathing occurred gradually. If you asked, he always had some baseline problem, but he slowly deteriorated. His history of COPD is typical. Most COPD patients have had breathing problems for years. Sometimes, patients deny this history of "emphysema," but the history of trouble breathing with activity will be there for a period of time. They are almost always long-term smokers. Don't be fooled by the guy who smoked for 30 years but tells you he doesn't smoke because he quit yesterday or last month. He probably temporarily quit because the extra respiratory effort it takes to inhale a cigarette was too much for him.

In these cases, look for a patient who may be fat or thin but has a thick chest from front to back. This is what doctors call a "barrel chest." This implies that the patient needs big, deep breaths all the time to get enough air. The lungs are so diseased that they need every inch filled with air to get enough oxygen.

The patient with COPD may be breathing with "Pursed Lips." The lungs of a patient with COPD lose their elasticity that helps keep the alveoli within the lung open. As a result, in order to keep them open, the patient will exhale with pursed lips, as if blowing into a trumpet. This

creates expiratory pressure within the lungs to keep the alveoli open and thus increase the ability to exchange oxygen and carbon dioxide.

He has the typical morning sputum production of a smoker. Small villi within the airways help to clear sputum. These villi in the smoker become overwhelmed with particulate matter from cigarettes and are also paralyzed by substances inhaled through cigarettes. As a result, after awaking in the morning, the smoker must produce a forceful cough to clear this sputum. In most people, this tends to be clear unless a bronchitis or pneumonia infection has turned the sputum yellow or green.

Patients with COPD usually do not have chest pain with SOB. When you listen to the lungs, you notice that the air does not get in very far or very deep. As patients get worse, you may hear no noise at all when they try to breathe in. If this is the case, get ready to intubate, Although expiratory wheezing is the classic finding you expect with COPO or asthma patients, remember: The sicker they are, the less they wheeze. This is because not enough air is moving through to cause the wheezing sound.

SCENARIO C

Case Presentation

Mr. Jones called 911 because he cannot breathe. He is panting as he speaks and can only get out one word at a time. He must take several breaths between each word. You note that he is sweating profusely and that his lips and fingers are blue. The patient is put on high flow oxygen by mask.

Physical Exam

Upon further questioning, you find that the patient has had this condition since last week. He replies that when he breathes, he has a sharp pain in his right lower ribs (this location will vary from patient to patient) that is not constant and lasts only a second at a time. The patient has never had a pain like this before. As you are talking, you put on the cardiac monitor, which shows a sinus tachycardia. You start an IV.

The patient also has a cough that produces yellow or green thick sputum. He has a fever but says he has not had any heart problems or lung problems (he may have emphysema). When asked if he is a smoker he replies no (but could be yes). The patient says he doesn't take any medication (or could take a blood pressure pill or a sugar pill or insulin).

Vital Signs: BP: 130/8/8 P:130 R: 40s, labored

Temperature: Hot to touch.

Color: Blue

Diaphoresis: Yes

Appearance: Gasping for air and uncomfortable.

Lung Sounds: Rales in right lower chest (same spot the patient indicated above); he may have some wheezing, too.

JVD: No

Peripheral Edema: No

Clubbing: No

Cyanosis: Yes

Assessment

1. What is your impression of this scenario?
2. What is the significance of the man's blood pressure? Temperature? History? Lung exam?
3. What is the significance of JVD and peripheral edema?
4. What would your treatment be?

Treatment

- Should the patient get Nitroglycerin? Lasix?
- Should the patient get a breathing treatment?
- Should the patient get intubated?

Patient Outcome

Nitroglycerin is NOT appropriate here. If you hear wheezing then a Betaagonist breathing treatment is fine. This man had a large pneumonia. Remember that people with COPD or asthma are at risk for pneumonia. So are diabetics and people with strokes.

Case Summary

The classic findings of pneumonia are:

- a. Pleuritic chest pain -A sharp, momentary chest pain that occurs when the patient takes a breath. This occurs because the pleura (the lining around the lungs) is inflamed and hurts as it moves against the chest wall with each breath.
- b. Fever - Patients may have alternating periods of chills followed by fever.
- c. Night sweats.
- d. Sweats with periods of high fever.
- e. Localized chest pain- Pain in the part of the lung where the pneumonia is located.
- f. Rales at the area of the lung where the pneumonia is located.

Patients with lung diseases are at risk for pneumonia because the normal cleaning system of the lungs does not work well. Patients with prior strokes or any other mental status compromise are at risk for pneumonia because they can aspirate. Aspiration sucks down fluid, food, or saliva into the trachea. This travels down to cause pneumonia in the lung. Diabetic patients are also at risk for pneumonia as they are for all infections. This is because the immune system in these patients is diseased. The immune system problem also causes pneumonia in people with renal failure, people on steroids or chemotherapy, and people with AIDS. The same immune problem can exist in people with malnutrition or in chronic alcoholics.

The next case study illustrates specific points made in this chapter.

CASE STUDY 5-3

Case Presentation

You are called to the home of a 54-year-old male who complains of chest pain. He describes it as a burning sensation around his throat and thinks it's "indigestion." He has had this burning before but antacids don't seem to help. Over the last couple of weeks it has come on when he walks up one flight of stairs to his second floor apartment but it always goes away when he sits down to watch TV. **The** reason he called 911 is because now the pain won't go away.

Someone told him once he might have borderline high blood pressure but otherwise he avoids doctors because he has always been "healthy." He has smoked one pack per day for 30 years. He was adopted and doesn't know any medical history regarding his parents or siblings. He occasionally has a cough and hasn't checked his temperature because he doesn't own a thermometer.

Physical Exam

As you enter the room, you see a pale, diaphoretic male who appears uncomfortable sitting in a chair. He has opened his collar because he feels hot and feels like he can't get his air.

Vital Signs: BP: 198/126 P: 114 R: 18

Heart: Regular tachycardia with strong pulses.

Lungs: Scant rales in the bases with no wheezing.

Neck: No JVD.

Extremities: No edema. Clubbing noted.

As you get set up to start oxygen, IV, and monitor, the patient suddenly becomes unresponsive with agonal respirations.

Assessment

1. What should you immediately do next?
2. Does this patient have an acute respiratory or cardiac condition?
3. Is there further history you would like to obtain?
4. Should the patient be intubated?

Treatment

The patient does not have a palpable pulse. You place the patient flat on the floor, hook up the monitor, and see that the patient is in ventricular tachycardia. You defibrillate at 200J, the patient returns to sinus tachycardia with a pulse, and begins to breathe again with good respiratory effort. You start Amiodarone per protocol. The 12-lead EKG that you obtain in the field reveals an anterior wall MI. With a stable BP, you give a SL NTG and transport.

Patient Outcome

You called Medical Control to report your assessment and treatment of this patient. With this report, the emergency department was able to call the on-call cardiologist and cath lab team

before the patient arrived. The cardiologist was just finishing lunch in the hospital cafeteria and reported she would be right over. Upon your arrival, both the emergency physician and cardiologist were standing at the door. The patient was taken immediately to the cardiac cath lab where a 100% blockage of the left anterior descending coronary artery was opened and stented. The patient did well and was discharged in four days to complete his cardiac rehab.

Case Summary

This case highlights how quickly a patient's apparently stable condition can become unstable and the importance of completing your assessment wherever you find the patient. This always assumes the scene is safe and remains safe.

While an inferior wall MI occasionally causes bradycardia and hypotension, an anterior wall MI frequently causes rhythm disturbances such as ventricular tachycardia. Obtaining a 12-lead EKG in the field can clue you in to anticipate the complications of each type of MI.

This patient likely has had a couple of weeks of stable angina thought to be indigestion that resolved with rest. On the day you were called, the patient developed unstable angina that did not go away with rest and progressed into a MI.

Remember your ACLS. For witnessed Vtach, the first treatment is not to intubate the patient, but to shock the patient. Your partner can provide 100% O₂ by non-rebreather mask or bag valve mask ventilations as long as it does not delay the hook-up of the monitor to the patient and ultimate defibrillation if indicated.

CASE STUDY 5-4

Case Presentaion

You are called to a nursing home to transport a patient to a hospital. The problem is shortness of breath. Upon arrival, you find a Mr. Smith in marked respiratory distress. His wife and son are at the bedside along with a nurse. The nurse tells you he has been well but developed a cough and a fever today. The nurse tells you he was "breathing just fine" the last time she had checked on him. Mr. Smith is now having difficulty speaking because of his dyspnea and seems confused. He acknowledges he felt well earlier, but the cough and breathing have come on rapidly. He tells you he is "too tired to breath." The family is upset at the severity of his condition and is arguing about "Dad's wishes." You decide to quickly assess the patient before you investigate this argument.

Past Medical History

You find out Mr. Smith has been very healthy overall, but is recovering at the nursing home after surgical repair from a broken right hip. His only medicine is Vioxx. He has no allergies.

Physical Exam

General: Average-sized man, appears in respiratory distress.

Vital Signs: Temp:102.8, P:118, BP:128/84, R:34

Neuro: Lethargic, no focal deficits.

Heart: Tachycardic but regular.

Respiratory: Severely labored to point of approaching respiratory failure; Crackles distinctly heard on left, clear on right.

Abdomen: Soft and non-tender.

Skin: Pink, very warm, and moist.

Extremities: Good pulses but cyanotic fingers with cool hands and feet. You also notice a MedicAlert bracelet on his wrist with an information contact number, as you thoroughly examined him from head to toe.

Assessment

1. How sick is this patient?
2. Does he need to be intubated?
3. What do you think may be the cause of his symptoms?
4. Considering Mr. Smith is confused and lethargic, how are you going to address the family's disagreement? How can the MedicAlert bracelet help you with this?

Treatment

You determine the patient has pneumonia and needs immediate intubation and ventilatory support for respiratory failure. You explain this issue to the family. The wife exclaims, "We've been married for 47 years and I know he would never want to be kept alive by a machine!" The son turns to you and states he is the medical power of attorney and orders you to "do everything necessary for him."

You remember Mr. Smith is wearing a MedicAlert bracelet, and you decide to call the number to possibly help resolve the issue. The nurse who takes your call confirms Mr. Smith's 10 and informs you that he has a written advance directive stored with the MedicAlert 24-Hour Emergency Response Service. It states, "Do everything unless I have a terminal condition."

You return to the family and tell them you have called MedicAlert, you have confirmed his advance directive, and you inform them of exactly what it means. You then tell them he has pneumonia and is currently very sick, but that pneumonia is treatable and not a terminal condition. His wife feels much better about intubation and "machine" support because you told her that he has a good chance of recovery. You intubate the patient successfully at the nursing home and quickly transport him to the closest ED.

Outcome

Mr. Smith is started on antibiotics in the emergency department and admitted to the ICU. He is extubated off the ventilator on hospital day number six and recovers well. He is eventually discharged home in excellent health. His wife sends your supervisor a box of chocolates because you saved his life and were so good about talking to her when her husband became ill.

CONCLUSION

Shortness of breath (SOB) is not a diagnosis but a symptom. In the elderly population, SOB can represent cardiac problems as well as pulmonary problems. You must know the key questions in your history to quickly lead your assessment to the right organ system. You must know the key features in your physical exam to either confirm or deny your initial assessment. When the diagnosis is unclear, be aware of risks of treatment versus withholding care. Sometimes the patient's response to treatment can help either support or deny your diagnosis. This will be helpful to the ED staff.

Chapter 6

FALLS IN THE ELDERLY

Andrew K. Chang, MD

OBJECTIVES

- Learn the factors that predispose the elderly to fall.
- Learn the difference between intrinsic and extrinsic causes of falls.
- Learn the importance of searching for the underlying intrinsic, or medical, cause of a fall.
- Routinely perform a scene survey in every case of an elderly fall in order to identify the extrinsic contributors/causes of a fall.
- Be aware that falls are the most common cause of accidental death in patients above 65 years of age.
- Learn that 25% of elders who fall are at high risk for significant decline and or death.
- Discuss the teaching points of the case study.

INTRODUCTION

As we age, several factors develop that predispose us to fall (see Table 6-1). Because of these factors, elderly patients cannot react and adjust to the forces that disturb their footing and balance. For example, when a younger adult slides on a wet floor or loose carpet, he can quickly correct his position to remain upright. This "uprighting reflex" may be impaired in elders. This loss of the uprighting reflex can result from many different mechanisms such as stiffness from arthritis, nerve damage from diabetes, loss of strength from stroke or disease, or decreased vision due to cataracts. Due to the many things that disturb the uprighting reflex, falls are very common in the older population. Falls become increasingly more common the older the individual becomes.

The scope of this problem is truly enormous, with one-third of all people above age 65 and one-half of all people above age 85 sustaining at least one fall each year. Falls account for the majority of traumatic injuries in the older population, followed by motor vehicle accidents, pedestrian accidents, violence, and burns.¹ Compared with young adults, elderly patients who fall are 10 times more likely to be hospitalized and eight times more likely to die as the result of the fall.

TABLE 6-1 PHYSICAL EXAM FOR FALLS

1. Always establish your ABC's.
2. Immobilize the cervical spine if indicated.
3. Assess the patient's level of consciousness and mental status.
4. Note the patient's vital signs.
5. Place on a cardiac monitor, due to the risk of cardiac dysrhythmias.
6. Do a secondary survey searching for traumatic injury, including signs of elder abuse.
7. Focus specifically on the head, neck, hips, and pelvis.
8. Direct special attention to areas of patient complaint. Fractures are the most common serious injury resulting from a fall.
9. Do a careful neurological evaluation.
10. If the patient has been ambulatory since the fall, consider a check for orthostatic blood pressure and pulse changes.
11. Always check the blood sugar for hypoglycemia.
12. If rapid testing of the hemoglobin is available, this should also be performed.

ASSESSMENT ACTIONS

Two actions are required from any prehospital care provider responding to a patient who sustained a fall:

- 1) Evaluate for a medical cause of the fall. The largest life threat in elderly fallers is NOT trauma. It is the medical deterioration (MI, CVA, dysrhythmia, hypovolemia) that caused the fall in the first place.
- 2) Evaluate injuries suffered as a result of the fall itself, including possible injury to the cervical spine.

Falls in the elderly can be a sentinel event. This means that the fall itself is often the presenting symptom of a person's underlying medical problem. Falls that arise from within the patient are called intrinsic falls. This means the fall results from weakness, illness or loss of function within an individual. Intrinsic falls may be the first clue to deterioration in the status of your patient and can signal an impending or existing emergency. You need to assess every single fallen patient for a possible intrinsic underlying cause of the fall.

Extrinsic falls are caused by the external environment. These occur when someone trips over a rug, slips on the ice, or is pushed. Extrinsic falls may also be called **mechanical falls**.

Of all elderly emergency department patients who sustain a fall and are discharged, 20-25% are dead within 12 months. For those requiring hospitalization after a fall, as many as 50% are dead within 12 months. The elderly, who represent 12 percent of the population, account for 75 percent of deaths from falls. In some cases, death is due to trauma from the fall or complications in the treatment or recovery. However, death is usually not from the fall itself. Death most often results from the underlying medical problem that caused the fall. If only the trauma is treated, then most of these patients will wind up dead.

The **critical action** you must take when responding to a reported fall is to search for an underlying medical cause. This approach saves lives.

As is true for most of us, elderly people do not like to be embarrassed and do not like to admit to weakness or deteriorating health. When you ask patients why they fell, the overwhelming number will respond, "I tripped" or, "I slipped." You should be very skeptical about this answer. You should independently try to corroborate or refute the history you are given about how the fall occurred. Look for hidden pathology that could have caused the fall. Ask the patient about the activity he was engaged in just before and at the time of the fall, especially if the activity involved a positional change.

Search for trauma as a result of the fall, including evidence suggesting abuse or neglect. Do not forget the possibility of elder neglect or abuse that could be heralded by a fall. If you are suspicious, ask the patient when you have them away from others who may have committed the abuse. Remember also that any confusion in an elderly trauma patient should not be assumed to be a baseline condition. Confusion could instead indicate inadequate oxygenation or ventilation, a head injury or impending shock.

If you are at the site of the fall, examine the area to see if a slip or a trip is feasible. Is the floor wet? Is the ground irregular? Are there loose floorboards, tiles, or rugs? Was there a witness who can verify the cause of the fall? Is the patient wearing ill-fitting shoes? Is the area dark? Can the patient see the problem areas on the ground? Are there any medications and potential intoxicants that may have contributed to the fall? If witnesses are present, ask them about the patient's condition and behavior at the time of the accident.

SEARCH FOR HIDDEN PATHOLOGY

Fall History

Always ask if the patient felt weak or dizzy prior to the fall. Ask for symptoms that would indicate a cardiac cause, such as chest pain, palpitations, irregular heartbeats, or shortness of breath. Ask for postfall loss of consciousness that could indicate intracranial trauma. Remember that retrograde amnesia for syncope is present in one-third of all syncope patients. Retrograde amnesia is defined as a loss of memory for events immediately before the fall occurred. That means that one-third of all patients who have syncope do not remember fainting because their brains were not getting enough oxygen or glucose at that time to preserve awareness of the event.

Fall Questions

In order to identify intrinsic causes of falls, all fallers should be asked specifically about the following:

1. Question the Patient for Cardiac Problems
 - a. Chest pain and/or arm pain;
 - b. Palpitations or irregular heart beats;
 - c. Shortness of breath or dyspnea on exertion;
 - d. Diaphoresis;
 - e. Nausea and/or vomiting;
 - f. History of MI or cardiac dysrhythmias.
2. Question the Patient for Neurologic Problems
 - a. Focal weakness or numbness;
 - b. Ataxia - prior trouble with walking or balance;
 - c. Aphasia - trouble with speech; slurring or forgetting words;

- d. Trouble with activities of daily living. Can the patient comb his hair, brush his teeth, button his shirt, and tie his shoes? Answers to these questions will often reveal a serious underlying problem.
- 3. Question the Patient for Symptoms of Volume Loss
 - a. Vomiting or diarrhea;
 - b. GI bleeding - has the patient noted any black or bloody stool? Do they have a history of ulcers, diverticulitis, or colon cancers?
 - c. Lack of fluid and food intake;
 - d. Specifically ask about orthostatic symptoms on sitting up or standing prior to this fall.
- 4. Question for Generalized Illness/Weakness
 - a. Is there any history of cancer?
 - b. Diabetes - was he/she hypoglycemic? Check glucose on all patients, Note use of insulin or oral agents as well as the last meal.
 - c. Check for symptoms of infection: fever, cough, URI or flu symptoms, abdominal pain, pain with urination, increased frequency of urination.
- 5. Question for Acute Abdomen
 - a. Abdominal or back pain may indicate an abdominal aortic aneurysm;
 - b. Vomiting may be from gallstones or bowel obstruction;
 - c. Existing hernias can cause obstruction or strangulation of bowel loops.
- 6. Question for use of Drugs that Could Impair Balance or Awareness

Is the patient taking any sedatives or narcotic pain medications, antihistamines, antihypertensives, or alcohol?
- 7. Question for Loss of Uprighting Reflex
 - a. Neuropathy (loss of sensation);
 - b. Musculoskeletal problems (arthritis, foot deformities);
 - c. Vertigo;
 - d. Old strokes (loss of strength/mobility);
 - e. Parkinson's disease;
 - f. Poor vision.

If the patient states that he was "dizzy," ask the patient to explain what he means by "dizzy." Ask him to state his feeling by using words other than "dizzy." In general, patients with dizziness fall into one (or more) of four categories: vertigo (i.e. room spinning), near-syncope (feeling like you are going to faint), dysequilibrium (feeling unsteady on your feet), and ill-defined lightheadedness (these patients often cannot use terms other than the word "dizzy").

Vertigo is a common cause of dizziness. Benign positional vertigo, while not life-threatening, can be incapacitating. The distinction of serious and benign causes of vertigo often requires a complete ED evaluation. It is important to note that vertigo could be due to something serious, such as a stroke or brain tumor. When a patient complains of dizziness, be aware of the varied and complex conditions this can signal. If you can't be sure of the cause, then assume a life-threat is possible and act accordingly.

Physical Exam for Falls

If you are called to the site of the fall and the patient has not been moved, then begin your approach with immediate attention to the cervical spine. If the patient must be turned for assessment, be sure to log roll with cervical immobilization. Carefully examine for obvious trauma to head and neck. Look for fractures; give special attention to hips.

If the patient has been up and ambulatory after the fall, then cervical immobilization can be done more calmly and comfortably. Remember that post-fall ambulation does not rule out a cervical spine injury. To be safe, immobilize early. Also, in the case of an obvious injury such as a hip fracture, the cervical spine should be immobilized since the patient's neck exam cannot be trusted due to a **distracting injury**. A distracting injury is an injury that focuses a person's attention. This injury may cause so much pain that the person is, therefore, unaware of other serious but less painful injuries sustained in the same event. For example, the severe pain from a broken hip distracts a person from the soreness of a black eye.

Treatment

Your management of the patient must first include the treatment of any causative medical problems. Second, treat injuries from the fall itself. Orthopedic injuries, especially pelvic and hip fractures, may be accompanied by significant **occult bleeding**. You need to know that elderly patients tolerate shock very poorly. Therefore, prevention of shock is important. If hypovolemic shock states exist, you need to administer fluid in discrete boluses. Boluses of 2DD-5DDcc of normal saline are suggested.

Repeat boluses until correction of the shock or accumulation of fluid in the lungs is evident on your exam. This method of fluid administration will help prevent causing congestive heart failure from fluid overload.

TABLE 6-2 TREATMENT OF FALLS

1. Airway is always first. Establish airway patency and breathing, Begin to administer oxygen as warranted by the patient's presentation. Intubate if needed (remember to use in-line stabilization of the neck if cervical injury is suspected).
2. Circulation is next. Establish a cardiac monitor - treat any rhythm disturbance by ALS protocol.
3. Establish an IV as determined by:
 - a. The severity of the underlying cause of the fall;
 - b. The severity of the traumatic injury.
 - c. The stability of the vital signs.
4. If you find an obvious medical cause of the fall, such as a stroke, then treat as appropriate for that condition.
5. Immobilize the cervical spine.
6. Immobilize any extremity fractures. Ice and elevate if possible.
7. If skull or rib fractures are present. give oxygen and establish an IV.
8. Apply compression dressings to bleeding sites. Be especially aware of blood loss from skull or facial wounds. These may require manual compression.
9. Check the blood sugar.
10. Individualize every case depending on the level of severity you establish through a careful history and physical exam.
11. Discuss trauma severity scores with Medical Control.

CASE STUDY 6

Case Presentation

Police have broken down the door of an 80-year-old man's apartment. He lives alone and the son called police because his father would not answer the phone. The patient is found face down on the floor near his bathroom. He is confused and cannot give an accurate history as to what has occurred. He can only give you his first name and is disoriented to place and time. You look around and find no extrinsic causes of fall, such as loose carpeting. You notice the apartment is clean and orderly. Your partner states the kitchen is well-stocked. On the night table near his bed, you see multiple prescription bottles and you collect them. He takes Metoprolol, Lipitor and a vitamin. You notice that one of the bottles (Metoprolol) is nearly empty despite a recent fill date.

Physical Exam

You notice an elderly, thin and frail man, who is confused. He does not accurately answer your questions, but instead repeatedly mumbles what you think is a woman's name.

Vital Signs: BP 95/60, Pulse 45, Resp. 16.

His head and face show no obvious trauma. Because he is confused and has fallen, you assume a cervical spine injury and immobilize him appropriately. The remainder of his physical, including a brief cardiac, lung, and neurologic exam, are normal. You notice no signs of incontinence or oral trauma.

Assessment

1. What do you think is the most likely cause of this fall?
2. Can you establish a baseline level of function for this man?
3. Does determination of his baseline level help you to assess the severity of his condition?
4. What is the significance of his current mental status?
5. If the patient was baseline demented, would you assess his mental status differently?
6. Is the patient in shock? If so, what is the likely cause?
7. What is the likelihood of head or cervical spine injury?
8. Do you need to gather any more information before initiating treatment?
9. List the priorities in the care of this patient at this point in time.
10. What is the likelihood this patient had a seizure?

Treatment

You place the patient on two liters of nasal cannula oxygen, initiate an intravenous line, and attach a cardiac monitor which shows sinus bradycardia in the low 40's. You initiate the bradycardia protocol for your system and administer 1 mg of Atropine IVP and place the external pacer pads on the patient's chest. A fingerstick glucose shows a level of 80. The Atropine has no effect on the patient's heart rate. You alert the receiving hospital that you have administered Atropine per protocol and have a six minute ETA. They direct you to administer a second milligram of Atropine and transport.

On arrival to the emergency department, the patient is still confused.

Vital Signs: BP 85/55, Pulse 42, Resp. 18.

The emergency physician asks you to stay while he evaluates the patient and orders a chest radiograph and cervical spine films. A formal EKG shows sinus bradycardia. Initial blood work is unrevealing. You give the physician the prescription bottles you found at the patient's bedside and point out that the Metoprolol bottle is almost empty despite a prescription fill-date of only two weeks prior. The emergency physician presumes that the patient has taken an overdose of beta-blockers and begins appropriate treatment, which includes an intravenous Glucagon drip and intravenous Vasopressors.

Case Summary

Although the patient was found near the bathroom, there was no evidence of extrinsic causes of the fall. The fact that the man lived alone in a well-kept apartment was a clue he was a highly functioning independent person. The likelihood this confusion is new was high. The dramatic change in independent living to complete disorientation signals an acute serious medical condition.

The patient's slow heart rate was a clue that the fall could have been due to medical cause. The patient is now in shock of likely cardiac cause. He should have this addressed by ACLS protocol. You correctly initiated immediate treatment. Good work.

You alertly found the patient's medication bottles and astutely noted that the number of pills missing from the Metoprolol bottle was greater than what should have been missing, given the prescription fill date. Had there been a longer ETA, Medical Control may have initiated either IV Glucagon or pacing in the field.

The patient had appropriate cervical spine immobilization. The elderly have osteoporotic bones that are easily injured, even with minor trauma. There is a good chance of head injury. However, this will not affect your immediate actions. There is no outward trauma, no tongue biting, no incontinence and no post-ictal state. You accurately identified all the information you could to address the likelihood of seizure.

Outcome

The patient is admitted to the cardiac care unit. He is treated for beta-blocker overdose and stabilizes. Relatives are eventually contacted and it is learned that the patient has been depressed since the patient's wife had died exactly one year before. The patient later admits that he took the Metoprolol in an attempt to end his life. The patient is started on antidepressants and a counseling program. His oldest son convinces the patient to move in with him and his family. Six months later, he is coaching his grandson's little league and is happy to be alive.

Your quick identification of possible beta-blocker overdose allowed the patient to get immediate and focused treatment which saved his life. Had you ignored the prescription bottles, the patient may not have survived. Had you assumed he simply fell or jumped to the head trauma conclusion, his outcome may have been grim.

CONCLUSION

Falls in older persons are a sentinel event. Although the majority of falls are simple slips and trips, the astute pre-hospital provider always searches for serious pathology causing the fall

before accepting the easy explanation. The evaluation of falls in the older patient triggers a two-pronged approach to find the intrinsic cause first, then deal with the resulting trauma.

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Chapter 7

Abdominal Emergencies

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OBJECTIVES

- Understand why abdominal problems may not cause abdominal pain in older persons.
- Learn the significance and life-threatening potential of abdominal pain.
- Gain an acute understanding of the many cases of abdominal pain .
- Identify the common life-threatening abdominal conditions seen in older persons.
- Describe the typical presentation of Abdominal Aortic Aneurysm.
- Discuss the important findings required for assessment of Gastrointestinal Hemorrhage.
- Explain the classic symptoms and signs for a Ruptured Viscus.
- List the findings associated with Ischemic Bowel.
- Discuss the teaching points of the case study.

INTRODUCTION

Abdominal pain in the elderly is a problem that challenges even the most experienced healthcare provider. What can seem to be a very minor problem on the surface may end up being a life-threatening condition. Always consider abdominal pain a serious complaint.

The most difficult presentations of the acute abdomen in the elderly are not those with the chief complaint of abdominal pain. The most challenging acute abdominal cases are those without abdominal pain. In these patients, you can easily get distracted by another symptom and can

miss the true cause of the problem entirely. Because of the resultant delay in diagnosis, these patients may deteriorate and die en route to the hospital or during the emergency department workup. How can you avoid these pitfalls?

Abdominal pain is elusive in the elderly because their physiology is different from that of younger adults. Elderly patients have a diminished or incompetent immune response. Therefore, they do not exhibit the classic signs of acute **peritonitis**. Peritonitis is an inflammation of the membrane that lines the abdominal cavity and the intra-abdominal organs. When this tissue becomes inflamed, it causes pain in proportion to the degree of inflammation.

In patients with a normal immune response, the first symptom is a vague pain throughout the abdomen that steadily intensifies. As the area involved becomes more irritated, symptoms worsen and the pain localizes to the source of the inflammation. Patients develop severe tenderness to the touch. Then they develop "guarding" (tightening) of the abdominal muscles, which becomes progressively tighter and tenser until the patient's abdominal muscles are as hard as a wooden board. This is termed a "**rigid abdomen**."

Elderly patients often are not able to develop an inflammatory response. Therefore, they cannot develop the symptoms of intensifying abdominal pain and guarding of the abdominal muscles. If these symptoms are absent, then so are your major clues leading to the correct patient assessment.

Abdominal Pain Life Threats

The rapidly life-threatening causes of abdominal pain should always be first on your list when you are evaluating patients with abdominal pain.

Gather evidence to look for the following:

- Abdominal Aortic Aneurysm (AAA) - Rupture or Dissection
- Gastrointestinal Hemorrhage - Upper or Lower
- Ruptured Viscus-Rupture of a Hollow Intra-Abdominal Organ: Stomach, Bowel, Bladder, or Gallbladder
- Dead or Ischemic Bowel
- Acute Bowel Obstruction

1, Abdominal Aortic Aneurysm (AAA)

Definition

An **aneurysm** is a localized abnormal dilatation of a blood vessel. As the wall of the vessel dilates, it becomes thinner **and** thinner until the wall pops like an over-inflated balloon. Many factors cause aneurysm formation. Some of these factors are:

- a. Atherosclerotic Disease
- b. Elastin Loss
- c. Collagen Loss

Since these factors are age-related, older patients are at higher risk for this condition. To better delineate the patient's risk for an AAA, ask very specific questions in your history.

- a. Does the patient have a known aneurysm?
- b. Does the patient have known atherosclerotic disease?

Some forms of atherosclerotic disease are coronary artery disease (angina or prior myocardial infarction), peripheral vascular disease, **and** hypertension.

c. Are the patient's symptoms consistent with AAA? AAA is the thirteenth leading cause of death in the United States. And, the incidence of AAA is increasing, with one study reporting a sevenfold increase from 1951 to 1980. This disease is common and can be rapidly fatal; therefore, it is important to recognize it.

Symptoms

In general, patients with dissecting or rupturing AM's exhibit certain common symptoms.

In leaking or rupturing aneurysms, blood loss may lead to hypotension, syncope, or shock. The higher the area of disease, the more symptoms may be noted. Since the vertebral nerve roots (the nerves that come out of the spinal cord, passing in among the vertebrae) are very close to the abdominal aorta, neurologic symptoms such as paralysis, numbness, or weakness of the legs can occur with an AM. This happens if the aneurysm damages the nerve root. Since the renal arteries that supply the kidney branch directly off the abdominal aorta, urologic symptoms such as decreased or absent urine output can occur with an AM. Sometimes, the aneurysm can rub against part of the GI tract and, over time, cause a fistula or connection between the stomach or intestines and the aorta! This is called an aortoenteric fistula. It means that the aorta can directly flow blood into the GI tract. Obviously, this will cause massive gastrointestinal bleeding. If these cases are not taken directly to the operating room and instead are treated like the usual GI bleed, these patients may die.

Physical Exam

a. Tachycardia: Tachycardia is commonly seen in an AAA. However, it may not occur because of the advanced age of the patient or the vagal influence of the pain. Severe pain can stimulate the vagus nerve, which will cause the heart rate to slow. Drugs such as Beta blockers can also block tachycardia, masking this finding.

b. Orthostatic Hypotension: This can be seen in patients with moderate blood loss from a dissection or a slow leak in the aneurysm. Ask patients if they feel dizzy or weak when sitting up or standing.

c. Hypotension or Shock: This finding is obviously a serious sign of severe blood loss. These patients are pale or cyanotic and cold. They have a narrow pulse pressure and are bradycardic.

d. Pulsatile Abdominal Mass: This is the one finding that makes your assessment easy. A large mass in the midline abdomen with either a visible or palpable pulse coming from it represents the bulging balloon itself. One series reported that a pulsatile mass was felt in 77% of ruptured AAA's. However, other studies report that the mass is not so common and can be obscured by abdominal fat or abdominal distention. The mass may be difficult to find in the patient who is writhing in pain, is very obese or is otherwise uncooperative.

e. Femoral Pulses: Absent or asymmetrical femoral pulses are very suspicious for an AAA. However, most patients with an AAA still have equal femoral pulses because the aneurysm is high and does not go all the way down to the iliac arteries. As long as blood is getting past the aneurysm to the lower abdominal aorta, femoral pulses will be present.

f. Bilateral Leg Ischemia or Bilateral Leg Neurologic Symptoms: This is strongly suspicious of an MA. It requires blockage of blood flow centrally to both legs or involvement of the vertebral nerve roots adjacent to the spinal canal.

Treatment

In patients with a suspected MA:

- a. Place the patient on high flow oxygen by non-rebreather mask. Be prepared to intubate if the patient loses responsiveness.
 - b. Establish two large bore IV lines.
 - c. If the patient is hypotensive, begin a fluid bolus in 200 cc increments.
 - d. Place the MAST suit around the patient. Check with medical control before inflating.
 - e. Definitive care for these patients takes place in the operating room. Treat quickly and transport to the closest hospital as rapidly as possible.
- The following case study illustrates specific points made above.

CASE STUDY 7-1

Case Presentation

A 67-year-old man calls for help because he fell while trying to get up from a chair. He tells you he has had strong pain in his back for about an hour. He tried to get up but his legs were so weak and numb, they would not work. Now the pain in his back is even worse. His wife thinks he broke his back. He cannot move his legs, so he thinks he has had a stroke. He has had high blood pressure for about 15 years. He smokes two packs a day, has an enormous stomach, and his doctor told him he has poor circulation to his legs.

Physical Exam

You see a very obese 67-year-old man lying on the floor of his living room. He is in severe pain with writhing of his upper body. His legs do not move. His skin is pale, pasty, and diaphoretic.

Vital Signs: BP: 102/160 P: 120 R: 18

He is alert and coherent. Head, face, and neck show no signs of any trauma. PERRL, arms 5/5 strength, sensory intact.

His legs have no spontaneous movement, no withdrawal to pain. He does not feel the needle stick when you prick his legs to check for pain sensation.

Heart rate regular, legs are cold, mottled and blue. The femoral pulses are very faint bilaterally. There are no pedal pulses.

Lungs clear.

Very obese. You feel a pulsating mass in the epigastrium. His belly does not hurt at all. The lower abdomen is mottled and blue.

His back is totally non-tender to palpation (the patient feels the touch, but it does not cause pain), no trauma noted.

Assessment

1. What is happening with this patient?
2. Could he have a fractured back or a tumor in his spinal cord?

3. If he has a fracture or tumor, then why are his legs blue and his blood pressure low?
4. Should your impression be the same if you do not feel the pulsating abdominal mass?
5. Why does he have back pain?
6. Why doesn't he have abdominal pain?
7. What is your treatment of this patient?

Treatment

- Put the patient on high flow O₂ per non-rebreather mask.
- Start two large bore IV's of normal saline wide open.
- Place the patient on a backboard and C-collar.
- A monitor is put on and shows a sinus tachycardia rate 120 with few PVC's.

Patient Outcome

This patient is critical. He has sudden paralysis of both legs, severe pain, and he is hypotensive. A life threat is imminent. After rapid transport to the emergency department and a 400 cc normal saline bolus, the patient's blood pressure is 110/68; pulse is still 120. The physician feels a large pulsatile mass in the upper abdominal and no femoral pulses or lower extremity pulses. The patient's entire lower body is mottled and blue. His back pain is very severe and not relieved by 10 milligrams of Morphine IV. A CT of his abdomen reveals an AM with leakage and extension to the femoral arteries. Thirty minutes after arrival in the emergency department, he goes to the operating room for repair of the aneurysm.

Case Summary

Remember that patients can have a life-threatening, intra-abdominal problem and never have any abdominal pain. Severe back pain and leg paralysis can be from a fracture, an abscess, or a tumor. However, none of those problems should interfere with the blood flow to the legs or cause hypotension.

The only problem that explains all of this man's symptoms is an aneurysm. Always look for the one single diagnostic impression that explains all the symptoms. Patients usually have only one acute crisis at a time. To look for two acute problems where one explains everything wastes time.

Neurologic symptoms occur in an abdominal aneurysm when the vertebral nerve roots are damaged by the expanding aneurysm. Ischemia of the legs is caused by lack of blood flow past the area of the aneurysm. The presence of a pulsating mass in the belly clinches your impression. However, if the mass is missing, the evidence for an AAA is still overwhelming.

This case happened to show clear ischemia to the legs. What if the man had good femoral pulses and good color to his legs? In that situation, the feeling of an abdominal mass becomes much more important. Not all cases of AAA exhibit such clear-cut symptoms. It is in those cases that abdominal examination becomes important.

2. Gastrointestinal Hemorrhage

GI bleeding most commonly affects patients 60 to 90 years of age. The overall mortality from GI bleeding is about 10%. The more elderly the patient, the higher the risk of death. This is due to several factors.

Symptoms

Pain is a common symptom in patients with ulcers, gastritis, esophagitis, and diverticulosis. All of these diseases may exist without bleeding. However, bleeding is potentially a life-threatening symptom in all cases. Pain may not be present with cancer or in angiodysplasia.

Angiodysplasia is a malformation of the blood vessels in the GI tract that may result in bleeding. Angiodysplasia is found in 25% of people above age 60.

GI bleeding is signaled by:

1. Vomiting of blood or coffee-ground material.
2. Excretion of blood, blood-tinged stools, or black tarry stools.
3. Weakness, syncope, or pain.

The significance of the bleeding should be assessed by the following standards.

TABLE 7-2 ELDER HEMORRHAGE RISKS

Elders are:

- Less able to compensate hemodynamically for the acute blood loss.
- Less likely to feel any symptoms from ulcer disease and, therefore, seek treatment at a later stage, if at all.
- More likely to be taking Aspirin or nonsteroidal drugs, both of which place them at risk for ulcer diseases and upper GI bleeds.
- At higher risk for colon cancer, **Angiodysplasia**, and **Diverticulitis**, which are the major causes of lower GI bleeds.
- More likely to be on blood thinners, which make any bleeding problem more serious.

History

- a. How much blood was passed? Attempt to quantify the amount and the form of blood.
 - How many times did the patient vomit or pass blood?
 - Was it just blood or were there other contents, food/stool?
 - Was it bright red blood (signaling a fresh bleed)?
 - Was it dark or coffee-ground emesis? Was it dark or black stool? Each are clues to the site and timing of bleeding.
- b. Over how long a period did this occur?
 - Large amounts over a short time are more severe and call for more action.
- c. Does the patient have a history of GI bleed? 'Specifically ask if the patient has had an ulcer, gastritis, esophagitis, or diverticulitis.
- d. Does the patient have risk factors for GI bleed?
 - Alcohol abuse.
 - Liver problems/cirrhosis (a chronic liver disease).
 - Use of Aspirin.
 - Use of nonsteroidal anti-inflammatory drugs (NSAID's) such as Motrin, Advil, Anaprox.
 - Use of any blood thinner such as Coumadin, Plavix, or Lovenox.

- e. Is there a history of blood clotting problems?
- f. Is there a history of cancer?
- g. Ask for a history of orthostatic symptoms today.
 - Is the patient weak or dizzy when sitting up or standing?

Physical Exam

The following provides a checklist of physical exam findings you should look for and document:

- Note if the patient is in distress/shock state.
- Check for tachycardia.
- Check for hypotension.
- Check for orthostatic changes.
- Is the patient pale or anemic? (Check **conjunctiva** and nail beds to see if they are pink.)
- Check for capillary refill (should be <3 seconds).
- Look at the emesis or stool, if possible.
- Qualify if it is in fact bloody.
- Quantify the amount of blood, if present.

Treatment

Make your assessment on the severity of the bleeding. If the bleeding is severe or the patient has any changes in vital signs, a fluid bolus is appropriate and the patient should be put on 100% oxygen and cardiac monitor.

- a. Oxygen
 - Increase concentration for worsening condition.
- b. Establish an IV
 - Give fluids as appropriate.
- c. Transport

The following case study illustrates specific points made above.

CASE STUDY 7-2

Case presentation

You are called to the nursing home for a patient who vomited blood. Mr. Harris is a 72-year-old with a long history of ulcers. He also has had several strokes and has been increasingly confused as a result of these strokes. He is in a nursing home because he can no longer take care of himself. While you wait for the nurse, you see his transfer sheet that reads: CVA's, dementia, ulcers, MA, and hypertension. His medications are Vasotec, Zantac, and Inderol.

The patient can tell you that his stomach hurts and that he threw up today. However, he cannot tell you what he threw up, how much, or how many times. The nurse who cared for him this morning went home and the second shift people never saw him vomit. "It's all on the transfer

sheet," they say. The primary complaint on the sheet reads, "Vomited blood, complains of abdominal pain. Doctor called, request transfer to emergency department. Vitals stable."

Physical Exam

The patient is lying comfortably on his bed.

Vital Signs: BP:130/92 P: 82 R: 20

Skin: Warm and pink.

Heart: Regular

Lungs: Clear

ABO: Very thin with some tenderness in the epigastrium; no masses are felt.

Vasc: Good color and good distal pulses.

Neuro: A baseline very mild, right-sided weakness from one of his strokes, speech clear, no sign of trauma.

Assessment

1. What is going on in this patient?
2. What are his risk factors?
3. What questions have not been asked?
4. How much time would you spend to get those answers?

Treatment

Start oxygen and place the patient on a monitor. It shows a normal sinus rhythm with a rate of 82. You start an IV of normal saline at a keep-open rate and transport to the hospital. The patient's vital signs are stable. He looks stable on assessment. However, some important points from the history are missing. You do not know if he vomited up a bucket of bright red blood or if he spit up a drop of coffee-ground blood. You don't know how long this has been going on or if it has been long enough to result in black stools. Going by what you see, his acuity is mild to moderate.

However, since so much information is missing, you should not have a false sense of security.

Patient Outcome

Because he appears stable, the patient is put in one of the back rooms where he is evaluated after forty minutes. His vitals are stable. A rectal exam shows lots of bright red blood in his stool. When a nasogastric tube is placed into the patient's stomach, bright red blood begins to pour out. During the next ten minutes at least 1,500 cc of red blood is drained. The patient becomes tachycardic and hypotensive. A surgeon is contacted to see the patient. After twenty minutes the patient begins to vomit up huge bright red blood clots around the nasogastric tube. In thirty minutes he arrests. Despite massive fluid resuscitation and initiation of a blood transfusion, the

patient dies in the emergency department. Autopsy shows an aortoenteric fistula, which poured blood into the patient's duodenum.

Case Summary

While most cases of GI bleeding are not life-threatening, all of them have that potential.

Usually the bad cases will have both an impressive history and abnormal vital signs. In this case, the history was really inadequate. However, the vital signs were stable. Even if the man had said, "I threw up an entire gallon of blood," your treatment was appropriate for his condition at the time. People often exaggerate the amount of blood loss, and you have to rely more on what you see than on what you are told. However, this case highlights the need for information that may increase your belief that the patient is seriously ill. **Only downgrade patients when you have proof that they are stable, not because you lack proof of critical illness.**

As detailed in this chapter, the required historical points for a reported GI bleed include the amount and frequency. The nursing home supervisor should be asked to call the patient's nurse at home for this history. However, this should not delay your transport of the patient. The nursing home supervisor can be asked to gather the facts. She can then be called from the ED for necessary information. Since ambulance crews generally go to the same nursing homes time and time again, it pays to have the nursing home repeatedly comply with a few minimum standards. Often the nursing home staff learn from prehospital care provider expectations.

Due to the rapid deterioration of this patient, there was not enough time to get him to the operating room for treatment. A better history may have increased everyone's suspicion to get him evaluated earlier in a busy emergency department. For the one time in a hundred that a patient's life depends on it, taking those five minutes to get a better history is worth the trouble.

3. Ruptured Viscus

Definition

A **ruptured viscus** is the erosion of any intra-abdominal hollow organ open to the abdominal cavity. The following are most common:

- Ruptured Gastric Ulcers - Stomach contents spill into the abdominal cavity.
- Ruptured Duodenal Ulcers - Stomach contents spill into the abdomen, or the ulcer may erode into the peritoneum or the aorta causing an aortoenteric fistula. Either an ulcer or an aneurysm can cause these fistulas.
- Ruptured Diverticulitis - A **diverticulum** is an outpocketing in the colon. If this outpocketing swells and enlarges, it may rupture. Then feces empty from the colon into the abdominal cavity.
- Ruptured Appendicitis - Spills fecal material into the abdomen.
- Ruptured Volvulus - A **volvulus** is a twisting of the intestine causing severe dilatation of the organ. If this ruptures, fecal material spills into the abdomen.

Elderly patients are at risk for rupture of any hollow viscus (stomach, duodenum, intestine, and colon). This occurs because elderly patients are less likely to feel the symptoms usually noted from these diseases. If they do not feel pain or if their pain is minor, then the diseases can progress to its worst-case possibility, which is rupture.

History

Ask for a carefully detailed history, checking for each of the following problems: ulcer, cancer, diverticulitis, and appendicitis,

Ask if the patient has had:

- Abdominal symptoms;
- Lack of appetite or weight loss;
- Nausea or vomiting;
- Constipation or diarrhea;
- Fever.

A ruptured viscus is the end stage of a long pathologic process that usually evolves over days to weeks. Therefore, getting a careful and detailed history is warranted. This can be done well, even if it is done quickly.

Assessment

- Check the patient's overall appearance.
- Is the patient in distress or in shock state?
- Note the severity of pain.
- Check for tachycardia.
- Check for hypotension.
- Do a careful abdominal exam, See if the patient has tenderness, Is it localized? Is it primarily in one area of the abdomen? What organs are in that area?
- See if the patient has guarding or a rigid abdomen.

Treatment

a. Oxygen

b. IV's

- Use high flow; if the patient's condition is poor, be prepared to intubate,
- Give a fluid bolus if the patient is tachycardic or hypotensive,

c. Cardiac

- Monitor

d. Transport

- Definitive treatment is in the operating room. Without surgical repair, mortality is more than 98%.

The following case study illustrates specific points made above.

CASE STUDY 7-3

Case Presentation

The nursing home staff report that Mr. Smith in Room 18 is not eating and has not had a bowel movement in four days. The doctor wants him transferred for evaluation. You ask why the patient is in the nursing home. The nurse does not know. The patient has high blood pressure and diabetes. You know that neither of these problems is a good reason for nursing home placement. The patient is writhing about on the bed and is not coherent enough to answer any questions. While you begin your patient assessment, you request that the nurse go and find the patient's chart for information.

Physical Exam

The patient is a 66-year-old man in obvious distress. He is moving restlessly around the bed. He does not focus on you and does not respond to verbal commands.

Vital Signs: BP: 136/92 P: 120 R: 24 Blood Sugar: 96

The patient has a normal heart and lung exam. On evaluation of his abdomen, you find that it is very bloated. When you touch the abdomen, it is as tight as a drum and the patient screams. You cannot feel a pulsatile mass. The femoral pulses are equal; the feet are nice and pink.

Assessment

1. What is your impression of the severity of this patient's condition?
2. On what factors do you base your impression?
3. What are the possible problems in this patient?
4. What other information do you need from his history?
5. What is the explanation of his mental state?
6. Has his mental state changed? If it has, how quickly did the change occur?
7. What other information do you want for your assessment of the patient?
8. What do you expect on his monitor and why?
9. What treatment would you give?

Treatment

You establish ALS care with oxygen, a monitor, and IV's. Just in case, you start two large bore lines. You determine that the patient is dehydrated because his mouth is dry, his skin has very poor turgor, and it fits his history of no oral intake. Therefore, you give a fluid bolus. The nurse comes back and tells you the patient has cancer of the pancreas and liver. He is usually alert and talkative, but has become confused over the last day or so. The cardiac monitor shows a sinus tachycardia. You contact medical control for further orders.

Patient Outcome

It is determined that the patient has a perforated viscus. He is taken to the operating room where the ruptured bowel is repaired. A "debulking" operation is done to remove some of the tumor mass that caused his bowel obstruction with eventual rupture. The history of cancer in this patient really clarifies what is going on and essentially rules out the possibility that this patient has a rupturing aneurysm.

Case Summary

As you learned, peritonitis is what develops from intense inflammation of the abdominal cavity. Many elderly people cannot develop peritonitis because of the aging of their immune system. When a person does show signs of peritonitis, recognize it and treat it seriously. These patients can deteriorate and die very quickly. This patient had a very swollen (distended) abdomen. It was tight and very hard to touch. This is the classic "rigid abdomen."

A better history is needed in this patient. However, as is usual in nursing home patients (especially those who are confused), it takes a lot of hard work to get a complete history. Try to

find out how long the patient has been sick. How many meals has he missed? Has he been vomiting? Has he complained of abdominal pain? When did it start? Talk to the patient's nurses or the supervisor.

These things will help in the eventual assessment of your patient. In this case the most important pickup is that of his abdominal exam. Based on that one assessment, you know your patient is critical, requiring ALS care and rapid transport. The change in mental status, the tachycardia, and the skin changes also indicate severe illness. In this case, don't spend too much time tracking down answers to the history. However, do utilize that time you have. If the nursing home staff looks for the answers as you evaluate and stabilize the patient, then no time is lost. Learn to maximize your resources.

4. Dead or Ischemic Bowel

The condition of dead bowel is similar in many ways to that of a ruptured viscus. These patients generally have some gradual symptoms evolving over time. **Dead bowel** occurs when a segment of the bowel has not received enough blood flow. This can happen in one of several ways.

- First, the arterial blood supply can be cut off. This occurs in patients at risk of blood clotting. Patients with atrial fibrillation can form clots within the heart that on occasion are carried out during systolic ejection of blood from the heart. The clots will then travel until they stick in the gradually smaller and smaller arteries going away from the heart.
- Second, patients with cancer are at risk of clotting. If the clot lands in an artery feeding the bowel, then that segment of bowel can die.
- The bowel can also become ischemic due to an inflammatory process. As the bowel wall swells and swells, it can compress the vessels that give it blood, thereby cutting off its own blood supply.
- The key symptom in patients with dead bowel is pain **out of proportion** to physical findings. In these cases, you will have a patient writhing and suffering in severe pain. Your abdominal exam, however, in the early stages reveals a soft abdomen with minimal distention but a patient complaining of severe pain.
- Patients with dead bowel can have bloody stools and are generally tachycardic due to agitation. However, the vagal effect from severe pain may cause some bradycardia.

History

Look for a preceding history of vague abdominal symptoms. In dead bowel, there is usually a definite point when severe pain begins. Check for risk factors of atrial fibrillation and cancer.

Physical Exam

- On overall appearance, the patient seems to have obvious severe pain.
- Tachycardia is common. Bradycardia from vagal effect is rarely seen.
- Hypotension is a late and ominous finding.

Treatment

a. Oxygen

- Give high flow by non-rebreather mask.

b. IV Fluids

- Give a normal saline bolus for tachycardia and hypotension.
- Make sure lungs are clear prior to bolus.

c. Cardiac

- Monitor

d. Transport

- Again, definitive treatment for this acute abdominal emergency is surgical removal of the dead bowel. There is a very high mortality rate for patients delayed in getting to surgery.

The following case study illustrates specific points made above.

CASE STUDY 7-4

Case Presentation

Mrs. Walsh's family called you to see her because she is in "agony." She is an 82-year-old woman. Her daughter tells you she has had the "flu" for about a week. She had diarrhea, vomiting, and abdominal pain. Now she cannot eat and she has been crying for two to three hours. The pain was not too bad all week, but now she can't take it. The patient's only medical problem is an "irregular heart." Her only medicine is Digoxin.

The patient is crying. She begs you to take away the pain. You have to work hard to get her to specify that the pain is, "everywhere." She has not eaten all day. She tried to force a bowel movement earlier to relieve the pain and thought she may have passed some blood.

Physical Exam

You see a very thin woman in severe discomfort. She is alert and coherent, but it is difficult to get a complete history because she will not stop crying to answer your questions.

Vital Signs: BP: 142/92 P: 90s, irregular R: 18

Neuro: Normal

Heart: Irregular rate, 90-100/min.

Lungs: Clear

ABD: Soft; no pain to palpation anywhere; no masses.

Skin: Warm and pink.

Extremities: Good pulses, nice and pink, no edema, no cyanosis, capillary refill is normal (<3 seconds).

Assessment

1. How sick is the patient?
2. On what findings do you grade her level of acuity?
3. What do you think is causing her symptoms?
4. What risk factors does she have for dead bowel?

5. Does she have the key symptoms for dead bowel?
6. What history do you need to ask about her bloody stool?

Treatment

The patient was started on oxygen, as appropriate, and placed on a cardiac monitor that showed atrial fibrillation at a rate in the 90's. She got an IV with a fluid bolus in case she had a GI bleed.

Patient Outcome

The woman had the key symptom of **pain out of proportion** to physical findings, so an immediate surgical consult was obtained. They took her to surgery where she had a clot in the major blood vessel feeding the bowel. Despite three weeks in intensive care, she died from severe sepsis.

Case Summary

Remember that in cases of ischemic bowel, the patients are literally in agony. The pain is in the abdomen and it is extreme. However, when you examine that abdomen, patients seem fine or have very mild findings.

- Pain out of proportion to physical findings is the classic or key finding in patients with dead bowel.

Check the history of vague or mild abdominal complaints that suddenly and dramatically get worse.

Always check to see if there is any history of bloody stools. Investigate this well to see if it sounds like a serious GI bleed. When in doubt, check vital signs for clues of volume depletion, hypotension, tachycardia, and orthostatic changes.

Review the history for risk factors of both GI bleed and dead bowel. This may help to clinch your impression.

5. Acute Bowel Obstruction

Bowel obstruction is mentioned in this section because it often has a very benign presentation. Often, patients with obstruction call complaining of constipation. They may or may not have some abdominal pain.

Whenever you are called for constipation, consider that the patient may have an obstruction. Patients with a bowel obstruction are a true emergency, so have patience when the call is for something seemingly benign. Not all patients with obstruction are necessarily constipated. Some are able to leak soft stool past an incomplete obstruction.

History

Obstruction generally occurs in patients with prior abdominal surgeries, tumors, or hernias. If patients do not have a history of these problems, then obstruction is unlikely.

Patients with a complete bowel obstruction are constipated and in most cases cannot pass any gas. They have abdominal cramping and discomfort, but usually they do not have severe pain. Severe pain may occur late in the condition, especially if the obstruction has progressed to the point of ischemic bowel or even rupture.

These patients can have protracted vomiting. Generally, the emesis is only foodstuffs or bile. **Fecal** emesis, or the vomiting of fecal material, defines a patient with bowel obstruction. The only condition where patients have fecal emesis is with an obstruction.

Physical Exam

- Heart rate is generally normal.
- Blood pressure is generally normal unless the patient has had severe vomiting or is dehydrated.
- The abdominal exam usually reveals a mildly distended abdomen, which may be **hypertympanic**. This means it sounds like a tight hollow drum when you tap it.
- The abdomen is tender in all four quadrants with slightly more pain in the area of obstruction.

Treatment

In general, all elderly patients with abdominal pain should have ALS care. This is because apparently minor things can be life-threatening in the elderly. Be aware of the life threats and the level of acuity. If you suspect dehydration, and AM, a GI bleed, a perforated bowel, or dead bowel, it mandates ALS care.

CASE STUDY 7-5

Case Presentation

Mr. Buchanan is a 70-year-old muscular man who called 911 because he "can't stop vomiting." Three days ago, he initially had some nonspecific abdominal pain and then multiple episodes of vomiting each day. His abdominal pain "comes and goes" rhythmically. He did not go to see his primary care physician because he just thought he had some food poisoning after eating some leftover chicken. He tried to drink some apple juice but, "it came right back up." He occasionally gets constipated after eating bananas but has not had a bowel movement in a week. His appendix was removed 20 years ago.

While assessing Mr. Buchanan, he has a foul smelling emesis. No blood is noted.

Physical Exam

You see a muscular man who appears ill.

Vital Signs: BP: 102/70 P: 100s regular R: 20

Neuro: Normal

Heart: Regular 100s/min.

Lungs: Clear

ABD: Distended with pain slightly localized to the right lower quadrant. There is an old surgical scar in the right lower quadrant.

Skin: Warm and pink.

Extremities: Normal pulses. Capillary refill <3 seconds.

Assessment

1. How ill is this patient?
2. Is this patient in shock?
3. Is there further history you want to obtain?
4. What do you think is wrong with this patient?
5. What is the likely cause of this patient's illness?
6. What treatment would you initiate?

Treatment

The patient was started on oxygen and placed on a cardiac monitor. An IV was started and a 200cc normal saline bolus was given.

Patient Outcome

Although this patient has a history of constipation, no abdominal hernias were appreciated on exam. He did have former abdominal surgery, but no history of tumor. Therefore, he has one of the risk factors for obstruction. In the ED, an NG tube was placed. Feculent material was suctioned and vomiting was controlled. An x-ray revealed dilated loops of bowel consistent with bowel obstruction. Because of the previous appendectomy, bowel obstruction was likely caused by adhesions. The patient was taken to the operating room for lysis of adhesions. The patient made a full recovery.

Case Summary

Remember to obtain a history of hernia, previous abdominal surgery, or cancer on all "constipated" elders. These are high risk factors for bowel obstruction. However, an abdominal tumor may present as a bowel obstruction so the history may not help in these rare cases.

Straining, such as when forcing a hard bowel movement or when lifting heavy weights, increases the chance of developing a hernia. The physical exam is key to identifying an abdominal hernia. When tightening the stomach muscles, the patient will develop a bulge in the abdominal wall or inguinal area.

Vomiting is not caused by food poisoning, which is what some patients would have us believe. Most cases of food poisoning also develop diarrhea, which this patient did not have.

Conclusion

Abdominal pain in older persons can often signal serious life threatening conditions. The symptom of pain may develop very late when the disease process has become dangerous. You must be able to identify the intra-abdominal life threat even in cases where abdominal pain is not the major symptom. The astute pre-hospital provider must be able to look for specific historical facts and physical findings, which may be the only clues to an acute intra-abdominal catastrophe. With an understanding of the common causes of acute abdomen in older persons, you can then provide the essential lifesaving interventions.

Chapter 8

MENTAL STATUS CHANGE AND ALZHEIMER'S DISEASE

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OBJECTIVES

- Distinguish between altered level of consciousness and altered content of consciousness.
- Learn to always establish a baseline level of function in order to better determine the acuity and severity of any complaint.
- Understand the differences among dementia, delirium and psychosis .
- Identify that drug side effects or drug interactions are the most common causes of delirium.
- Describe the common medical, traumatic and toxicological causes of mental status change.
- Discuss the teaching points of the case study.

INTRODUCTION

Mental status change implies a **cognitive** impairment that represents a clinically significant change from baseline. An elderly patient may be clinically hypoglycemic and unresponsive to noxious stimulation, or may be restless, hallucinating, or confused. Both conditions represent acute mental status change, the former represents a decrease in level of consciousness, and the latter a disturbed content of consciousness. Management after initial assessment of the ABC's may be significantly different depending on whether the level or content of consciousness is impaired. An elder person with decreased level of consciousness may need to have the airway opened and provide breathing support. Alternatively, they may be so agitated or delirious that you need to utilize physical restraint or chemical sedation.

Altered mental status or mental status change often presents subtly, with features of both disturbed content and level of consciousness. The patient may be confused, incontinent, wandering, perhaps sexually inappropriate, violent, or suddenly unable to perform simple tasks like dialing a phone. When the change is subtle, the health care provider must be alert to the life-threatening causes of what that even-subtle mental status change can signify.

Instruments to Measure Level of Consciousness

The mnemonic **AVPU** represents the spectrum from normal alertness to unresponsive to any stimuli.

TABLE 8-1
AVPU SYSTEM FOR DESCRIBING LEVEL OF CONSCIOUSNESS

A	Alert spontaneously, normal interaction with environment.
V	Responsive with Vocal (Verbal) stimuli.
P	Responsive with only Painful stimuli.
U	Unresponsive to any stimuli.

The **Glasgow Coma Score (GCS)** is an assessment tool most useful when the decreased level of consciousness is due to head trauma or intracranial mass lesions. It is NOT designed to evaluate patients with primarily a disturbed content of consciousness. The Glasgow scale is based on three types of patient response: eye opening (E), verbal response (V), and motor response (M).

The GCS score is calculated by adding the best response from each category. The minimum GCS score is three. Patients who are dead will have a level of three. Patients with a combined score of eight or less are defined as comatose and often will need to have their airway protected by intubation and will require respiratory support.

TABLE 8-2
GLASGOW COMA SCALE

Eye Opening	Score
Spontaneous	4
With Verbal Stimuli	3
With Painful Stimuli	2
No Eye Opening with Painful Stimuli	1
Verbal	5
Oriented	4
Confused	3
Words Recognizable	2
Words Incomprehensible	1
No Verbalization	1
Best Motor Response	6
Obeys Commands	5
Localizes Pain (purposeful movement)	4
Withdraws from Pain	3
Abnormal Flexion with Pain	2
Abnormal Extension with Pain	1
No Response	1

Disturbed Content of Consciousness

There are three broad categories of patients with acute mental status change due to a disturbed content of consciousness.' These are:

1. Delirium
2. Psychosis
3. Dementia

In all three cases, these patients are awake, often confused and may be displaying unusual emotions and behaviors. Their ability to interact appropriately has changed. Caregivers for these patients may not know if this behavior is simply a manifestation of the normal aging process, a worsening of a dementia, a mental illness, or delirium.

1. Dementia

The essential features of dementia are a gradual, insidious compromise in cognitive function, characterized by progressive impairment of higher intellectual functions such as short and long-term memory, impaired abstract thinking, judgment, and often a change in behavior and personality.' These impairments significantly compromise social and occupational function and typically are permanent.

Characteristically, the patient with dementia is awake and their level of consciousness is not changed. Alzheimer's disease is only one of the many types of dementia that occur. Most, but not all, dementias are irreversible. Unfortunately, nearly 50% of the elderly living in the community meet criteria for dementia by age 85.

Dementia case finding research in the ED setting suggests that we under-diagnose dementia.

Since dementia is a gradual process, usually its evaluation occurs over time and is not urgent. However, pre-hospital providers often are called to transport patients for urgent evaluations under the following three circumstances:

1. The patient abruptly has changes in emotions, disturbing behaviors, confusion, or ability to self care;
2. Caregivers note behaviors that place the patient and/or the caregiver at risk; or
3. The caregiver no longer has the resources necessary to safely provide continuous care. You should understand that new symptoms may be due to worsening of existing disease or may signal a new and serious problem such as infection, dehydration, bleeding, heart attack, poisoning, trauma or psychosis.

Sundowning is a common occurrence in patients with dementia. Sundowning refers to a worsening in behavior that typically occurs when there is a change in the patient's environment that interferes with their ability to orient themselves. It is called sundowning because it was first described as a result of demented patients being in the dark. Any abrupt change in environment can result in a worsening of confusion and deterioration in behavior. This typically corrects itself once the patient can be reoriented to his environment. Constantly telling demented patients where they are and what is happening can help avoid sundowning behaviors.

New hallucinations are often of concern to caregivers. Patients with dementia can have hallucinations. However, be suspicious if hallucinations are NEW, that the patient may be having a new problem in addition to a chronic dementia.

2. Psychosis

Acute psychosis is defined as a global cognitive disorder due to psychiatric or emotional causes. It is very rare for a new psychosis to develop in elderly people. Therefore, the health care provider should not assume that mental illness (such as bipolar disorder or schizophrenia) is the cause of mental status changes in any elder patient.' Even in elders with a history of mental illness, the alert healthcare provider first evaluates for a physical illness or injury causing mental status change before assuming the cause is psychiatric in nature.

This approach is especially difficult when the chief concerns of the patient or caregivers are behavioral in nature, such as paranoid behaviors, sexual precociousness, violent outbursts, hallucinations, or emotional lability. Do not jump to the conclusion that this behavior is caused by a psychiatric illness. It is unlikely that any new behavioral disturbance in older persons is psychiatric!!! The elderly patient with acute mental status change should be approached as if the patient has delirium until proven otherwise. Remember "old people have old psychosis." New psychoses are something else.

3. Delirium

Delirium is defined as an acute global disorder of cognition and attention, abnormal vital signs, and a disturbed sleep-wake cycle. Symptoms fluctuate. They characteristically worsen or improve over the course of hours to days. Delirium has been associated with increased mortality and morbidity, longer hospital stays, and increased risk of institutionalization.

The elderly, especially the oldest old and the frail, are vulnerable to delirium due to physiologic, anatomic, cognitive, and metabolic aging changes. Any condition that alters the brain's metabolism can induce delirium. Patients with conditions such as dementia, psychiatric diseases such as psychosis, and those with significant functional or sensory impairment are particularly at risk for developing delirium. Diagnosing a new delirium in patients with pre-existing alterations of behavior is difficult.

Several diagnostic tests have been developed to determine if the patient has delirium. One system, the **Confusion Assessment Method (CAM)**, utilizes information the healthcare provider obtains from interviewing and interacting with the patient, as well as information provided by caregivers. The diagnosis of delirium requires two features of Category 1 and at least one feature in Category 2 (see table 8-3).

TABLE 8-3
CONFUSION ASSESSMENT METHOD FOR DIAGNOSING DELIRIUM

Category One

Acute Onset or Fluctuating Course
Inattention

Category Two

Disorganized Thinking
Altered Level of Consciousness

If you suspect delirium, you should try to determine the underlying cause of the condition. Drug side effects or drug interactions remain the most common cause of delirium' On average, the elderly take 4.5 different prescription medications and 2.1 non-prescription medications each day. Infections such as sepsis, meningitis, pneumonia or even simple urinary tract infections may present with delirium. Significant pain from any cause such as bowel or bladder obstruction, constipation, or fractures may also cause delirium.

Delirium may be the only sign of life-threatening medical conditions such as pulmonary embolism, a bowel obstruction, or gastrointestinal hemorrhage. Delirium may be the only presenting sign of myocardial infarction in a significant number (13-22%) of the oldest old (greater than 85) or in patients with chronic mental impairment.

SPECIFIC CAUSES OF MENTAL STATUS CHANGES

There are literally hundreds of conditions that can result in mental status changes. It is convenient to categorize these causes into three divisions: Medical, Traumatic and Toxicological.

A. Medical Causes of Acute Mental Status Change Include:

1. Infectious

Any infection in any organ system can result in mental status alterations. The most common infections are pneumonia, urinary infections, upper respiratory and sinus infections as well as skin infections. Life threatening infections such as meningitis and encephalitis must also be considered as a cause, especially where other infections do not exist.

2. Metabolic

Alterations in serum sodium and calcium are well known to cause insidious mental status changes. Other electrolyte abnormalities such as hypo- or hypernatremia can also cause problems.

3. Endocrinological

Both hypoglycemia and hyperglycemia are well-known causes of mental status changes, ranging from mild confusion to coma. Adrenal and thyroid problems are difficult-to-diagnose causes, of mental status change.

4. Environmental

Hypo- and hyperthermia can result in confusion.

5. Tumors

Cancer can result in mental status changes. Brain tumors are an obvious cause but cancers at many other sites can also cause derangements resulting in anything from mild confusion to coma.

6. Aneurysms

Non-traumatic rupture of cerebral vessels can result in bleeding into the intracranial space which can cause mental status problems.

B. Traumatic Causes of Mental Status Changes Include:

1. Concussion

Head trauma causing disruption of normal cognition without obvious bleeding. This is the equivalent to a "bruise" of the brain itself.

2. Subdural Hematoma

A collection of blood from vessels bleeding under the dura can collect slowly over time and cause gradual changes in behavior and ultimately coma.

3. Epidural Hematoma

A collection of blood from vessels bleeding over the dura that forms quickly and causes rapid deterioration to coma. A "lucid period" where the patient is temporarily unconscious, awakens only to fall into a coma within a short time, is the classic history for epidural hematoma.

C. Toxicological Causes of Mental Status Include:

Almost any drug can be a culprit. The most common problem drugs are:

- Alcohol
- Sedatives
- Hypnotics
- Antihistamines

Dealing with the Difficult Behaviors

Remember that your job is to assess the situation, stabilize the patient and transport appropriately. Your job is not to judge or fix the situation. When faced with patients that are not dealing in our reality, do not challenge or correct them. It is your objective to calm the situation, complete your assessment and transport. If the patient says it is 1965, do not correct them. If they think the president is Nixon and ask you what kind of job he is doing, simply evade the question in a nonconfrontational way. The only ideas that you should correct are ideas that you or someone in the environment would harm the patient. If they have those thoughts, gently say that no one is going to hurt them, you are only there to help.

Avoid chemical restraint, if possible, as this may confuse or delay diagnosis. In addition, drugs may have undesired effects in this population. However, if necessary to perform a safe assessment or transport, then sedation may be required as a last resort. Do not sedate for your own convenience.

Seek to orient the person who may be experiencing sundowning symptoms. Try to provide a well-lit environment and calmly repeat answers to their questions on what is happening, even if you need to repeat this over and over again.

Do not let an agitated patient agitate you. Always try to remain calm, keep your voice even and your actions slow and gentle.

Pre-hospital Care of Acute Mental Status Change

1. Initial assessment and stabilization should focus on ABC's. Elderly patients with altered mental status may be critically ill, particularly those with decreased level of consciousness or abnormal vital signs. Include temperature in vital sign assessment.

2. Obtain a cardiac rhythm strip.
3. Administer supplemental oxygen and monitor oxygen saturation if available.
4. Obtain blood glucose as soon as possible. If low, administer IV Dextrose, or utilize a safe alternative. If you are not able to obtain a blood sugar value, empiric treatment with Glucose is indicated.
5. Administer a coma cocktail according to your individual protocols if the patient is unresponsive.
6. Complete a thorough secondary assessment of the patient, including a neurological examination that evaluates level of consciousness and global cognitive abilities.
7. Obtain a complete list of the patient's medications (prescription, over-the-counter or herbal). Check for new medications, dates of prescriptions and ensure appropriate numbers of pills are gone from bottles. Check last dosage and time of administration of medications if possible.
8. Inquire about drug and alcohol use. Be aware that alcohol abuse is common in the elderly.
9. Provide for a safe environment for you and the patient. The delirious, psychotic, or agitated patient may be a danger to themselves or others. Physical restraint may be necessary to prevent the elder patient from pulling out IV lines, endotracheal tubes, or perhaps biting or striking others. Chemical restraint involving sedatives or anti-psychotic medications may also be necessary to prevent injury or to safely transport the patient. Should you need to utilize any form of restraint, document your rationale in the medical record and continuously reassess the patient. Never leave a restrained patient unattended.
10. Reduce agitation, anxiety, or confusion in the patient by interacting with them in a quiet, calm manner. Your touch should be gentle and reassuring. Speak slowly, simply, and loud enough to be heard without yelling. This is important as many elderly patients are hard of hearing. Talk with the patient in their line of vision so they may see who is talking with them, particularly if the patient is immobilized.
11. Communicate verbally and non verbally. Let them know what you are about to do, such as place an IV or take a blood pressure. Reduce extraneous noise and simultaneous interactions by more than one provider. Bright lights, a chaotic environment, and loud noises such as sirens will significantly worsen agitation or confusion.
12. Do an environmental assessment prior to leaving the scene where you first encountered the patient. Carefully observe the area for clues that may provide information helpful to determining the cause or causes of the altered mental status. The environment may give important clues as to how long the patient has been ill. Search for evidence of physical abuse or neglect. The thoughtful observation of the living conditions of the individual can give clues that the pre-hospital provider alone can provide.

13. Establish the patient's reliability and/or confirm your history with known reliable sources. A patient's confusion commonly interferes with obtaining a valid and reliable patient history. If you are not sure that the history you are obtaining from the patient is valid, check orientation and cognition. Ask a series of questions that are easily verifiable such as their date of birth or their address. Repeat a question after a brief period to see if the repeat answers are consistent. Ask questions with obvious negative and positive answers to see if the patient responds appropriately. Talk with a caregiver or someone who knows the individual well to corroborate the history. It may be helpful to ask the caregiver, "how have the patient's emotions or behaviors changed?"

14. Establish a baseline level of functioning. The timing of impairments in Activities of Daily Living (ADL's) such as the ability to toilet, feed, bathe, dress, or walk without assistance may give important clues that only the caregiver or pre-hospital provider could supply. Interview caregivers or any other people who are present and obtain phone numbers in case they need to be contacted later. Ensure that you talk with emergency care providers in the ED about what you saw at the scene.

CASE STUDY 8-1

Case Presentation

A woman called 911 to report her 80-year-old male friend had dramatically changed over the weekend. She last saw the patient three days ago and noted the patient had sinus congestion from a cold. Today, she found her friend angry, restless and confused. He attempted to strike her as she helped him get out of bed. In the last few months she has had to help him with some of his activities of daily living, but for the most part he could manage alone. Today, the house is in complete disarray, he is unshaven and wearing the same clothes from three days ago.

She knows he has high blood pressure, problems urinating, and takes several medications but does not know their names.

When you approach the gentleman for your assessment, he swears at you and tries to strike you.

Physical Exam

You note an unshaven, unkempt, elderly man.

Vital Signs: BP 128/60, P 126, R 22, T 37.2 axillary.

His lips are cracked and dry, lungs clear, he is tachycardic but no murmurs are heard. His abdomen is tender and much distended. Stool is noted in the bed sheets. He moves his arms and legs well, he appears to have normal strength and his movement is purposeful. He is agitated, easily distracted, confused, and constantly fidgeting with his sheets. His speech is **confabulatory** (he is making up words) and he cannot tell you the name of his friend or the current year.

Assessment

1. What is your impression of this patient?

2. He is not letting you touch him and strikes out at you. What should you do?
3. Does he have decision-making capacity? Does he have a right to refuse treatment?
4. Should you utilize chemical restraint or physical restraint or both?
5. How long do you think he has been like this?
6. Could this be delirium, worsening dementia, or psychosis?
7. Are there clues in the area that would be helpful to the ultimate diagnosis and treatment that only you could provide?
8. Knowing the common causes of acute mental status changes, what are some things that could have resulted in this gentleman's alteration of behavior?

Treatment

You and your partner gently restrain him with kerlex bandages around his wrists after talking with online medical control. They agree that the patient represents a risk not only to himself but to you. They agree he does not have decision-making capacity or a right to refuse treatment. An IV is established and a blood sugar is determined to be 146. He meets criteria for delirium utilizing the CAM method. His abdominal distention worsens with a bolus of IV fluid and he is more uncomfortable.

Looking around the room, you note a bottle of Benadryl with six of 15 tablets gone and another antihistamine non-prescription medication with five of the 10 tablets missing. The friend states that the patient does not drink alcohol. In his medicine closet are two prescription medicines, Hydrochlorothiazide for hypertension and Doxazosin for benign prostatic hypertrophy. You note the name and telephone number of the physician. You ask the friend about his next-of-kin and obtain their telephone numbers.

Case Summary

Your assessment that this is not a psychosis is excellent and based on sound principles of mental status change in the older person. You know that dementia is gradual and it is unlikely that dementia would evolve to this extreme in only three days. From your history, this is a new problem which probably began only three days ago. Therefore, delirium is the most likely cause of this patient's new and dramatic mental status change.

You were right that he does not have decision-making capacity and cannot refuse care. It was good to get the support of medical control to back your use of physical restraints. Again, it is another principle of care to avoid new drugs in the setting of acute mental status change. Avoiding chemical restraints is a good general approach wherever possible.

The environmental clues only you can provide are his use of new over the counter drugs for his "cold." Your detective work identified not only the drug but the dosage taken. You also completed the perfect data gathering by obtaining names and numbers of his physician and family who may have information critical to his treatment.

From the extensive list of causes of mental status change, you already eliminated hypo- or hyperglycemia by performing a serum glucose check. You know he has a cold and that infections can cause mental status problems. However, you do not have the ability to make this assessment in the field.

Outcome

The patient has a new acute delirium. He has probably had a slow cognitive decline that had not been formally diagnosed. But, you assessed a possible pre-existing mild dementia when the friend told you he gradually needed more help with ADL's. You were wise not to assume this dramatic change was just worsening confusion due to age. The cause of his delirium is multifactorial.

First, you correctly noted that the most common cause of delirium is drugs. Antihistamines can have profound cognitive effects in older persons. In addition, the antihistamines caused urinary retention. His bladder was distended and he had 1200 cc of urine when a foley catheter was placed in the ED. This urinary retention not only caused pain, but also resulted in a urinary tract infection. You know that either pain or infection alone can cause mental status change. Both of the over-the-counter medications resulted in his confusion and his acute urinary retention.

Your recognition of his medication use provided the essential clue to both his confusion and the urinary retention with infection. Without this information, the patient could have undergone unnecessary testing and treatment. Your history of a cold with sinus congestion lead to the patient getting sinus x-rays in the emergency department. These showed a significant sinus infection.

He was slowly rehydrated and given IV antibiotics. Over several days, his mental status cleared. He was discharged to a skilled nursing facility for a two-week period and then was able to return home.

CASE STUDY 8-2

Case Presentation

You are dispatched to a private home. The call is for sudden onset of confusion. Upon arrival, the son of Mr. Johnson, a 73-year-old male, states, "There is something wrong with him." In order to clarify the acute reason for the call you ask the son, "What specific things has your father done to make you think he is confused?" The son says, "Dad is complaining that President Nixon is a liar. He says my mom has made a mess of the house and mom has been dead for nine years." Since you know the importance of establishing a baseline, you find on further questioning that Mr. Johnson lives at home alone, functions well, and has never suffered from dementia. The son states he saw him two days ago and he was "completely normal." When you ask Mr. Johnson how he feels, he acknowledges he feels generally flu-like and his head hurts a little bit, but insists he is okay, and would prefer to just stay at home to rest.

Past Medical History

Generally healthy.

Takes Cardura for hypertension and a baby aspirin daily for "his heart." You know to specifically look for drugs that may cause confusion such as sleeping pills, anxiety or depression medicines.

SIP splenectomy after GSW to the abdomen in the Korean War.

Physical Exam

In general, you see an average-sized elderly male in no acute distress. He is oriented to person and place, but not to time (he says it is 1974). He demonstrates his confusion by talking about

how "You can't trust anybody from that Nixon administration. You know?" You note no smell of alcohol.

Vital Signs:	BIP = 132/78, P = 112, R=22, SpO2=98% on RA
Head:	Atraumatic
Neck:	Mildly painful as you flex it forward.
Heart:	Tachycardic, regular rhythm.
Respiratory:	Rate=22, non-labored, clear.
Abdomen:	Benign
Skin:	Noticeably warm to the touch and dry. A fine rash of tiny red dots, which do not blanch, is noticed on the hands and feet only.
Neurologic:	Pupil PERLL. He has equal strength in both arms and legs. He is ambulatory with normal gait.

Assessment

1. Is this more likely dementia or delirium?
2. How do you make the distinction between these two conditions?
3. Is Mr. Johnson competent to refuse care? Why or why not?
4. What is your impression of the case? Is this an acute or chronic condition?
5. What clues on history and physical may provide clues to the underlying condition?
6. What is the possible severity of this condition? How quickly must you act?
7. What precautions must you take?

Treatment

The patient was not allowed to refuse care. This is based on the fact that he is confused. He has mental status impairment and can therefore not understand the risks and benefits to care. Fortunately, you were able to gently insist that he "needed" to have his blood pressure checked, the IV started and to go to the hospital. You did not make an issue of asking for permission and just went ahead as if everything was fine. In this case it worked beautifully.

An IV was established in the field, oxygen was provided by nasal cannula, and the patient was placed on a monitor and quickly transported to the nearest hospital.

Outcome

When you arrived at the hospital you made a point to tell the physician that the patient felt warm, had neck tenderness, and had the unusual appearing rash described above. The ED attending confirmed these findings and immediately started the patient on IV antibiotics for

empiric treatment of meningitis and sepsis, and the patient was admitted to the hospital. Results of lumbar puncture and blood cultures revealed pneumococcal meningitis and sepsis. The patient recovered gradually to baseline after 10 days of inpatient treatment and was discharged home with normal mental status.

You made sure you used universal precautions and warned the ED staff of possible meningitis so they could limit personal exposure. Due to suspicion of meningitis, you and your partner began Cipro immediately.

This is a case where the abrupt change in mental status signaled an acute and life-threatening condition. Because you established the baseline, you know how dramatic this change was. Because you knew fever, neck tenderness and confusion are all signs of meningitis, you put the picture together. This allowed the patient to get expedited treatment and kept the exposure of the ED staff to a minimum.

CONCLUSION

Mental status changes are common in the older patient. It is important to distinguish between disturbed content and disturbed level of consciousness. New psychosis almost never occurs in older persons. Dementia is usually gradual while delirium is dramatic. The expert geriatric pre-hospital provider can identify the common causes of each of these conditions. With knowledgeable data gathering, an accurate assessment can be reached enabling appropriate treatment early.

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Chapter 9

NURSING HOME PATIENT

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OBJECTIVES

- Learn an orderly approach to obtaining documents, completing the assessment, and initiating transport.
- Learn the importance of determining baseline mental and physical function, and medications, dosages and last times of administration.
- Describe the atypical presentations of common illnesses seen in the nursing home patient.
- Identify needed transfer documentation.
- Identify "special issues" in nursing home patient transport including
 - DNR orders, direct admission, infection risks, and when to contact medical control.
- Evaluate your personal attitudes towards nursing home patients.
- Discuss the teaching points of the case study.

INTRODUCTION

Ninety-five percent of elders dwell in the community and only 5% live in nursing homes. Clearly, nursing home placement is NOT the norm for elder patients. However, up to 40% of elders will require nursing home placement at some time in their lives.' Many elders are only temporarily in nursing homes with the expectation of discharge into the active world of community-dwelling older persons. Therefore, we need to overcome our outdated stereotypes regarding nursing homes and their patients. Elders in nursing homes are more frequently transported to the emergency department than those dwelling in the community. The large number of EMS calls to nursing homes and extended care facilities requires all pre-hospital providers to understand the special concepts required for optimal care of this important population.

The majority of nursing home transfers to the emergency department are appropriate. About 40% of patients transported to the emergency department will require admission.' In general, these patients are sicker than those dwelling in the community. "Inappropriate" transfers account for only 7-23% of the total.' These inappropriate transports are a considerable source of cost and frustration to the EMS and hospital systems.' However, the paramedic should not

address issues of appropriate versus inappropriate transfers at the time of patient care. This should be handled between the EMS administration, hospital, nursing home, and individual physicians.

Insufficient documentation was a common problem in nursing home transfers, with 10% of those transported in one study, having no documentation at all from the **NH** on arrival in the emergency department. The most common documentation deficiencies in this study included documentation of advance directives, immunizations, baseline mental and functional status, diet, recent vital signs, and past medical history. Inability to find the patient on arrival at the nursing home and lack of documentation of advance directives were listed as major complaints by paramedics in one system.

EMS responses to nursing homes differ widely due to the uniqueness of each facility and EMS system within the community. These complex patients vary widely in terms of disability and number of pre-existing medical problems, which can be a challenge to EMS providers. The advantage the EMS provider has at a **NH** is the availability of alternate historians such as nursing staff and supervisors. Additionally, medical documents are usually available for review. The goal to optimize patient care is to develop an orderly approach to transferring **NH** patients.

Obtaining a History

A list of useful information needed from the patient and the facility is summarized in the section on transfer documentation. Lack of this information may compromise patient care.

Since nursing home placement is not a natural part of aging, the reason why a person is living in a nursing home is a critical fact. It is also the fact most often missing. Why is this individual in a nursing home in the first place? This helps establish a baseline and may reset your assessment of the situation.

If transport is initiated by the **NH** staff, the paramedic should obtain the history directly from the staff making the call as well as from the patient. In addition to the patient, the primary nurse is the best source for information on the current problem, and the paramedic is in the best position to obtain this history. Record the nurse's name if possible. If family initiates the transport, the paramedic should additionally document what relationship they have with the patient as well as the amount of contact they have with the patient. A family member who sees the patient infrequently is less likely to be a good judge of mental status or changes in ability to perform activities of daily living than the nurse who has cared for the patient on a regular basis for an extended period of time.

The patient who is unable to provide a history due to dementia or an acute mental status change presents unique challenges. EMS personnel are in the best position to find and document available history due to their access to sources such as the primary care nurse, aides, family, and the **NH** chart. This information will likely be lost if not documented at the time of transport.

The **baseline** mental and physical functioning of the patient should be established and any disabilities should be identified. A patient who is hard-of-hearing or visually-impaired can then receive appropriate attention. You should also establish the accuracy of historical information obtained from the patient. Dementia requires that a history be obtained from other sources and these sources should be documented.

Functional decline, defined as a loss of physical capabilities, can be assessed using the Activities of Daily Living (ADL's) and ambulation. The ADL's include feeding, grooming, dressing, bathing, and transferring and are important for self-care. Additionally, the patient's ability to ambulate and the need for appliances and supports (walkers, canes, etc.) should be recorded. Acute changes or recent declines in ADL function frequently indicates underlying illness and requires further evaluation. These are important to recognize both in evaluating the current illness and in disposition. As an example, assisted living or non-skilled nursing may no longer be appropriate for the patient with worsening mental or physical capabilities. Questions for establishing baseline mental and physical function are presented in Table 9-1.

TABLE 9-1
QUESTIONS FOR ESTABLISHING BASELINE MENTAL AND PHYSICAL FUNCTION

1. Is the patient able to speak?
2. Is the patient hard-of-hearing?
3. Is there a history of dementia or confusion?
4. If yes, over what period of time has it occurred?
5. Does the patient experience sundowning?
6. Is the patient usually oriented and to what degree (person, place, date, situation)?
7. Can the patient walk without assistance or using supports or appliances?
8. If no, over what period of time has this occurred?
9. Does the patient have baseline limitations in Activities of Daily Living (ADL's)?
10. Has there been any recent change in ADL function?
11. If yes, over what period of time has it occurred?

The patient's current level of NH care should be documented. Usual terms are assisted living, non-skilled nursing, intermediate care, skilled nursing, or dementia unit placement. Often the hospital is aware of the patient's originating from a NH, but this can vary widely as to the care actually available. Assisted living usually requires the patient be independent in the majority of ADL's. Non-skilled nursing means the patient needs assistance in ADL's but NOT assistance of a medical nature. Skilled nursing may indicate continuous nursing care is required. Placement in a dementia unit means a specific type of care is required for ADL's and patient safety.

An accurate, up-to-date medication list will not only guide further testing and therapy, but it may also lend support for the diagnosis. Medication errors, interactions, side effects, and over medication can potentially occur. You may see a patient with a change in level of consciousness that has received a narcotic, when none was recorded on their order sheet. That patient may respond to Naloxone (Narcan) by becoming loud or agitated. This agitation may be why they were given the narcotic to begin with.

Medication interactions and side effects can occur due to the number of medications NH patients are routinely on and increased sensitivity to many medications. The presence of agitation, depression, or difficult to control behaviors may lead to over-medication. See Table 9-2 for some examples of medications, symptoms related to over-medication or side effects, and final diagnoses.

TABLE 9-2

EXAMPLES OF COMMON NH MEDICATIONS, SYMPTOMS OF OVER-MEDICATION, AND FINAL DIAGNOSIS

Medication	Symptoms	Diagnosis
Aspirin, Coumadin	Bleeding Abnormalities	Gastrointestinal Bleeding, Nosebleed
Beta Blockers, Digoxin	Syncope	Bradycardia
Diabetes Medications	Altered LOC	Low Blood Sugar
Narcotics, Sleeping Pills	Altered LOC	Overmedication! Side Effect
Water Pills	Falls	Dehydration! Orthostatic Hypotension

Transfer Documents

Documentation deficiencies are common and may have a negative impact on patient care. The stringent adherence to providing complete transfer documentation can potentially prevent or decrease repetitive and unnecessary laboratory testing, errors in patient management, and delays in patient care to the emergency department or admissions to the hospital. Proper documentation also insures family and guardians are appropriately contacted, admissions are to the correct physician, medication reactions and adverse effects are not missed, religious preferences are honored, and advance directives are followed.

The care of the NH patient involves not just the staff, family and the physician at the NH, but must include paramedics and the hospital system. Hard copy information and documentation should accompany the patient through the transfer process. This information should be up-to-date, complete, and concise. Hospital, EMS, and NH protocols can maximize efficiency and completeness.

Depending on the facility, the staff may have the transfer forms and patient information ready at the bedside. In other facilities, it may take significant time to copy and complete the paperwork, once requested. If the documentation is not ready on EMS arrival, be sure to ask for it as soon as possible so as not to delay patient transport. Unless necessary due to patient condition, do not leave without the appropriate documentation, as this can delay care of the patient once they arrive at the hospital. Never compromise patient care for the paperwork.

Since typically the same EMS providers service the same NH facilities, it is possible for EMS to train the NH staff to provide the appropriate paperwork. If you do not accept incomplete work and insist on the same level of documentation every time, eventually they will comply, if for no other reason than to get you out of their hair.

Nursing home transfer sheets vary based on local preferences. The paramedic should be familiar with those within their system. Table 9-3 contains a checklist of information optimally contained in the nursing home transfer sheet.

TABLE 9-3 NURSING HOME TRANSFER SHEET CHECKLIST

D Name/Gender/DOB/Religion

- D Transfer Facility/Address/Phone Number
- D Dates of Stay in the Nursing Home
- D SSN/Medicare#/Insurance#
- The Nursing Home Patient
- D Responsible Relative or Guardian/Power of Attorney/Address/Phone Numbers
- D Physicians/Phone Number
- D Reason For Transfer/Physician *Orders/Date* and Time
- D Primary and Secondary Diagnoses (This is typically the reason why the patient is institutionalized.)
- D Recent *Vital Signs*
- D Hospitals/Facilities Discharged within 60 Days
- D Advance Directives and Living Will
- D Medications
- D Allergies
- D Immunizations
- D Past Medical and Surgical History
- D Tobacco and Alcohol History
- D Baseline Physical Function: Ambulation and ADL's
- D Usual Mental Status: Alert, Oriented, Wanders, Combative, Confused, Withdrawn, Other
- D Disabilities: Amputation/Contractures/Paralysis/Decubitus Ulcer
- D Impairments: HearingNision/Speech/Sensation
- D Appliances Supports (e.g. wheelchair, walker, prosthesis)

Modified with Permission from Saunders AB, Witzke DB, Jones JS, Richmond K, Kidd P. Principles of Care and Application of the Geriatric Emergency Care Model. In: Saunders AB. *Emergency Care oftha Elder Person*. Lansing, MI: SOciety for Academic Emergency Medicine; 1996:87.

The transfer document checklist (see Table 9-4) can help ensure essential documents for the appropriate care and disposition of the patient are not missed.

This information is important to the patient's care and may diminish needless patient suffering by reducing unnecessary testing and admissions and increasing the efficiency of healthcare delivery. Depending on the patient's level of distress, the medic mayor may not be able to obtain all of the history and documentation required for the best prehospital and emergency department care of the patient. Systemwide discussion between the paramedic service administration and nursing home can greatly facilitate the availability of necessary documentation and information at the time of a transfer. In addition, if the facility has FAX capability, information necessary in the ED, but not necessary or available to the medics, can be faxed if scene time is critical. When emergent transport due to patient distress is required, minimally obtain the Nursing Home Transfer Sheet and the phone number and name of the facility so additional information can be obtained after transport to the receiving hospital staff.

TABLE 9-4
NURSING HOME TRANSFER DOCUMENT CHECKLIST

- O Demographics Sheet with Patient Information

- Completed Nursing Home Transfer Sheet
- Complete Medication List with Allergies
- Recent Hospitalizations and Where
- Recent Testing, EKG's, and X-rays with Results
- Recent Progress Notes
- Copy of Recent Physician Orders
- Health Care Power of Attorney and Contacts
- Advance Directives and Code Status
- The Name and Phone Number of the Nursing Home
- Who Requested and Authorized the Transfer

Atypical Presentations

Atypical presentations of medical problems are common in nursing home patients. This is due to multiple factors including decreased sensitivity to pain and thirst, medication use, pre-existing medical problems, and dementia or confusion. The regularity of atypical presentations necessitates a broad approach to most chief complaints. This is illustrated in Table 9-5.

**TABLE 9-5
FREQUENT ATYPICAL PRESENTATIONS FOR COMMON DIAGNOSES IN ECF
PATIENTS**

Complaint	Eventual Diagnosis
Altered LOC	Infection: Pneumonia, Urinary Tract Infection Most Common Hypoglycemia
SOB	Myocardial Infarction Hypoxia (low O ₂)/Hypercarbia (elevated CO ₂)
Abdominal Pain	Myocardial Infarction Bowel Obstruction Infection/Sepsis Gallbladder Disease Myocardial Infarction
Weakness	Infection/Sepsis Diabetic Ketoacidosis Fecal Impaction Infection/Sepsis Myocardial Infarction Dehydration Hypoglycemia Metabolic Abnormalities
Dizziness/Syncope	Infection Myocardial Infarction/Arrhythmia Dehydration Gastrointestinal Bleeding Leaking Abdominal Aortic Aneurysm

Special Issues

a. Resuscitation

Cardiac arrest in some nursing home patients is to be expected. Preparing for this in the very frail, severely debilitated, or terminally ill patient is best done prior to any crisis. NH personnel often request EMS for a patient in cardiopulmonary arrest. This can create unique problems for the EMS provider. Although many nursing homes can and do manage this scenario well, other facilities depend on EMS personnel to handle this acute crisis. It can be confusing and frustrating to respond to a cardiac arrest call at a NH and then find out on arrival or during the code the patient has a DNR. This is best handled by asking about code status and documentation on arrival.

Advance directives and code status significantly alter the EMS approach to patient care and ultimately define the decision to initiate CPR and ACLS in arrest situations. For the individual paramedic responding to an emergency at the NH, the decision should remain as clear as possible. If a prior resuscitation decision has been made and there is supporting documentation for a DNR order, CPR and ACLS should NOT be initiated. If no decision has been made or documentation is lacking, the paramedic should proceed with resuscitation. Guardians and competent patients can change a DNR order and may do so in times of distress and crisis. The ability of individuals with health care power of attorney to change advance directives for a patient in a time of crisis varies from state to state and must be addressed within your system.

EMS should partner with nursing home administrators, physicians and nursing to reduce calls to paramedics under circumstances where intervention by EMS or the hospital would be futile. Families who infrequently visit nursing homes should not change the wishes of currently incompetent patients because the end of life is near. Unfortunately, sometimes they waver during a crisis. The end of life is difficult for everyone so education and support should be available to families and patients facing these difficult situations. There are larger questions concerning the under-utilization and poor documentation of code status. These are addressed in the advance directives chapter.

b. Direct Admissions

Direct admissions to the hospital, bypassing the emergency department, can present difficulties for the EMS provider. Frequently the nursing home staff contacts the medical director of the facility to advise that a patient is having a problem. The medical director requests the patient be transferred to the hospital as a direct admission to the hospital floor. When EMS arrives, it may become apparent the patient needs more urgent attention or has deteriorated and should be transported to the emergency department. The EMS provider should follow the protocols for their system. Some may recommend attempting to contact the admitting physician while others may depend solely on medical control. If your protocol suggests contacting the patient's physician and the request for emergency department transfer instead of direct admission is denied, the EMS provider should contact Medical Control. Advise Medical Control of the situation and ask for further instructions.

c. Universal Precautions

Post-transport disinfecting of the ambulance is important. Infections, such as Methicillin Resistant Staphylococcus Aureus (MRSA), are more common in NH facilities and can contaminate the EMS provider and their equipment. Proper cleaning of all equipment used during patient contact should occur per individual protocol to prevent the spread of infectious diseases to the providers or patients transported at a later time. Some infections found more commonly in the NH setting and the specific precautions required are listed in Table 9-6.

**TABLE 9-6
INFECTIOUS RISKS MORE COMMONLY FOUND IN THE NURSING HOME SETTING**

Infection	Precautions
HIV, Hepatitis	Blood Product/IV Precautions
TB, Pneumonia	Aerosol Precautions
MRSA	Skin Protection

d. Elder Awareness

Nursing home patients are more likely to be frail, demented, or have more extensive disabilities than those living in the community. Patients vary widely in ability to communicate and interact. It is especially important under these circumstances that patients are treated with dignity and respect. Special efforts should be made towards patient comfort (the patient may not be able to ask or tell you something hurts) and the paramedic should not make assumptions on the patient's ability to understand or communicate. Suggestions include protecting paralyzed limbs, keeping heels and ankles off the edge of the stretcher, providing extra cushioning to the back and hips, cushioning areas of contracture, dressing or covering patients appropriately for the weather, and asking about comfort. As importantly, nursing home staff and paramedics are a part of a team doing a very difficult and demanding job. Attitude is an important part of this. The paramedic's attitude should foster a sense of partnership with the NH staff and the hospital in caring for the needs of the community's frailest elders. As one paramedic was quoted, "It's all about patient care, and that is what we are here to do."

When special issues arise, the paramedic should rely on the advice of medical control and their system protocols. Keep medical control informed of special circumstances surrounding patient care and nursing home transfer. Paramedics must initiate appropriate interventions when indicated in crisis situations and refrain from altering care if confused by conflicting or lacking information on advance directives and code status.

CASE STUDY 9-1

Case Presentation

You are called to a nursing home for a patient who has fallen and cut his forehead. You find Mr. Green, a 67-year-old man, who is bitterly complaining, "how stupid I was to fall over like a toddler." You ask him what happened and he states he lost his grip on his walker and fell. He denies any loss of consciousness, headache, or neck pain. You inquire about medical symptoms causing the fall and he denies any weakness, dizziness, chest pain or shortness of breath before the fall. He says, "Just take me in to get my head stitched up, would you?"

The nursing home gives you a sheet listing Mr. Green's diagnoses as: Hypertension, Peptic Ulcer Disease, R Knee replacement, Arthritis and Macular Degeneration. He is taking Vicodin, Prilosec, Lopressor, Peri Colace and a multivitamin. The nurse on duty is busy with other patients and the floor clerk does not know any more details about him.

Physical Exam

You see a 67-year-old man with an 8 cm gaping laceration from his mid-forehead to his right temple. It is bleeding and his face and hands are covered with blood. He is sitting on the floor with a walker a few feet away.

Vital Signs: BP 168/92, P 55, R 16

He is awake and answers appropriately. He is oriented to person, place and time. His pupils are equal and midrange bilaterally.

His neck is not tender.

His heart is regular but slow, his lungs are clear.

He has no abdominal pain.

His handgrips are equal bilaterally and he moves his feet to your command.

Assessment

1. Is this a simple mechanical or extrinsic fall?
2. What other problems could have caused this fall?
3. Are you satisfied with the level of documentation provided by the nursing home?
4. Are you comfortable with the baseline level of function for this man?
5. Do you know the reason why he is in the nursing home? Could this information be important?
6. What are your treatment priorities? Should you delay transport to find other information?
7. Have you completely assessed him for trauma secondary to the fall?

Treatment

You immediately place a pressure dressing over the patient's laceration to control bleeding. You apply the cardiac monitor and it shows a sinus bradycardia at a rate of 55 beats per minute. You discuss the need for an IV and the patient reluctantly agrees. He complains loudly about the cervical collar. On transfer to the backboard, the man screams at movement of his right leg. You palpate the leg and note a deformity of the right knee. You cut his pants to reveal a large effusion of the knee with disruption of a healing incision line. Sensation and color are intact to his foot. You splint the knee then move the patient onto the backboard. You transport to the ED without incident.

Case Summary

1. There are many reasons for this man to have had a simple extrinsic fall. His recent knee surgery could easily explain loss of balance or weight bearing. Better communication with the nursing home staff could clarify that this surgery occurred only a few days ago and is the reason for his stay at the nursing home. With the facts you had, it was possible to assume his surgery had occurred months to years before and would have little bearing on this case. That is a mistake.
2. His bradycardia could be responsible for the fall. However, a rate of 55 with good blood pressure and mentation does not seem significant enough to result in a fall. You correctly noted that he is on a beta-blocker and this could result in the slow heart rate. Therefore, it is important to determine if the medication is new or if it has been taken improperly. If so, this could be an acute problem.
3. The documentation did not address the reason for nursing home placement nor the man's baseline level of function. If the history had stated his knee replacement was done four days ago, you would likely have assessed his knee initially. His orders dictate he should be wheelchair dependent. He was to use a walker only during supervised physical therapy periods. Knowing his baseline functional state fully explains the situation.

4. Control of bleeding. You needed to immediately control the hemorrhage from his scalp laceration.
5. Cervical immobilization is needed due to the mechanism of the fall and the fact that he has not been ambulatory since the fall.
6. Immobilization of the knee is needed. A dressing should be placed to cover the opening in this incision. You should take care to do this in an aseptic manner, as infection of a prosthetic joint is terrible and could require removal of the joint.
7. Pain medication should be considered if the splinting alone does not control his pain. However, since he only had pain on manipulation and movement, it is possible that splinting alone will be enough.

CASE STUDY 9-2

Case Presentation

A NH calls for transport of an 87-year-old female with altered mental status. On arrival, the NH nurse reports the patient was "more confused" and lethargic this morning. Since that time, the patient has become difficult to arouse and only mutters incoherent words when stimulated. Staff called the patient's physician who has requested transport to the hospital for direct admission. You ask for her paperwork and find that the patient was admitted to the nursing home one week earlier following a stroke with mild left-sided weakness and has additional past history of urinary tract infections, diabetes, and colon cancer. The nurse notes the patient was initially able to walk with a walker, participate in her own care, and converse. However, she was confused on admission to the NH. The past two days she became incontinent, stopped walking, and did not eat except with assistance.

Physical Exam

On entering the room you notice an apparently comatose patient with normal respirations. There is no response to verbal stimulation. At this point you know to inquire about an Advance Directive and the NH staff states the patient's family and physician have not yet completed the DNR paperwork. With moderate physical stimulation she begins to speak incoherently and moves all extremities equally, but with little effort. Her pupils are normal. There is no evidence of bruising or trauma. The chest, cardiac, and abdominal examinations are unremarkable.

Vital Signs: BP: 162/78 P: 62 R: 16 T: 95.5 O₂Sat: 94%

Prior to transport to the hospital, the patient becomes deeply comatose and the respiratory rate decreases to 8 and shallow. Oxygen saturation falls to 84% despite the use of a non-rebreather mask and oxygen.

Treatment

You initiate respiratory assistance with a bag-valve mask and oxygen. The patient continues to have a strong pulse and blood pressure. The finger stick blood sugar is less than 40. You start an IV and administer D50W and the patient becomes more alert and her respirations return to normal. The patient is still speaking incoherently and is lethargic. On admission she was alert and conversant, but confused.

You contact the patient's private physician who feels this can all be explained by hypoglycemia. He instructs you to continue with the direct admission. You are uncomfortable with this due to the patient's continued change in mental status after glucose administration. You call your medical control and they advise transport to the emergency department.

Assessment

1. What is your impression of this patient?
2. Why did she suddenly lose consciousness?
3. What is her baseline?
4. Is she at her baseline either before or after her episode of unconsciousness?
5. Can you transport to the emergency department against the instructions of the private physician?

Patient Outcome

Her hypoglycemia recurs while in the emergency department and she requires additional D50W and the addition of Glucose to her IV fluids to maintain a normal blood sugar. After **ED** evaluation, the patient is found to have urosepsis and dehydration. She had received her usual medications including an oral anti-hyperglycemic. She had not taken significant oral intake for about 48 hours. Lack of food, dehydration, and urosepsis lead to profound and recurrent hypoglycemia. In the emergency department, treatment included hydration, Glucose, and antibiotic therapy. During her hospital stay, she returned to her usual baseline and was subsequently discharged back to the nursing home.

Case Summary

Alteration of mental status in the **NH** patient is often multi-factorial. Hypoglycemia, dehydration, and sepsis all contributed to this patient's change in mental status.

Declining functional status indicates the need for further evaluation. This patient's case is unlikely to be an uncomplicated isolated episode of hypoglycemia. Deterioration in her ADL's started 48 hours earlier with incontinence and inability to feed herself. The start of urosepsis and dehydration may explain this progressive deterioration.

When the code status is unclear, initiate temporizing interventions such as bagging until this becomes clear. These actions and rationales need to be documented in the EMS transfer note. If you question the safety of transport for direct admission, it is reasonable to contact the patient's physician for further orders, if this is part of your protocol. If there is still a question as to the appropriateness of transport, contact your medical control. When you question actions for the good of your patient, you are providing superior care. You can often get good results by updating the physician with facts that will make him/her see what you see. In this case, you can simply say something like, "the reason we don't think this is simply hypoglycemia is because ...," and then list your observations of poor response to Glucose and progrevemental status changes over days.

Many common illnesses routinely present atypically in the NH patient. Urosepsis and dehydration presented as ADL losses and confusion with lethargy, and the patient never developed a fever.

Establish the patient's baseline function. In this case, the patient improved with D50W, but not to their baseline level of functioning. So incomplete response to Glucose is a clue. It would also be appropriate for you to recheck serum glucose. Abnormal mental status with normal range glucose would be more evidence for serious disease in this patient.

CONCLUSION

Nursing home dwelling patients are a special subset of the elderly population. They commonly utilize EMS services and frequently have critical health care issues. Astute EMS providers are familiar with the special circumstances surrounding NH patients. They are aware that nursing home patients commonly present with atypical symptoms making assessment difficult. They have mastered the art of ensuring complete communication from the nursing home staff. This provides essential history, which can enable an accurate assessment in the quickest timeframe. This special knowledge focuses your priorities in order to provide excellent care to this important group of patients.

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ABOUT MEDICALERT®

MedicAlert Foundation International, a 501(c) (3) nonprofit membership organization, is driven by its mission to protect and save lives by providing identification and medical information in emergencies.

It is the original nonprofit emergency medical information service, founded by a California physician and his wife in 1956.

With more than 4 million members worldwide, MedicAlert is recognized as the preeminent source of personal medical information during emergencies.

The MedicAlert emblem, worn as a bracelet or necklace, "speaks" for the injured who may be disoriented, unconscious, or unable to communicate for themselves, by alerting the prehospital care provider to special medical conditions and allergies of the member. It also provides a phone number to call the MedicAlert 24-Hour Emergency Response Center where nurses and medical personnel relay additional vital medical facts from the Member's computerized MedicAlert Electronic Health Record. Members enjoy peace of mind knowing MedicAlert will provide this information and call designated family contacts in emergencies.

MedicAlert maintains a professional education program for emergency responders, training them to look for MedicAlert medical identification emblems and to call its 24-hour Emergency Response Center for vital medical information.

HOW DOES MEDICALERT® WORK?

The MedicAlert life-protecting service provides emergency responders with:

- **Special Medical Conditions and Allergies:** The MedicAlert emblem, worn as a bracelet or necklace, alerts emergency responders to special medical conditions and wearer.
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The 24-Hour Emergency Response Center Provides:

- **Instant Access to Patient Information:** Within seconds, the Member's medical facts and vital information are delivered by phone or FAX at no cost to emergency medical personnel.
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- MedicAlert Offices in 10 Countries
- Professional Education Program (CEU's Available)
- Advance Directive Storage
- Recognized Provider of DNR Orders

GLOSSARY

1) Abdominal Aortic Aneurysm: A ballooning of the main artery, the aorta, as it courses down through the abdomen. The aneurysm weakens the wall of the aorta and can end in the aorta rupturing with catastrophic consequences (p. 99).

2) Activities of Daily Living (ADL's): Functions such as ability to dress oneself, use the toilet, feed oneself, and perform self-care (pp. 5, 98, 145).

3) Acute Problem: A problem, of rapid onset, connoting an illness that is of short duration, rapidly progressive, and in need of urgent care (p. 5).

4) Acute Psychosis: A global cognitive disorder due to psychiatric or emotional causes (p. 139).

5) Advance Directives: Legally recognized instructions made by patients or their surrogates to direct the actions of health care providers, expressing treatment preferences (pp. 6, 18).

6) Alveoli: The plural of alveolus. The alveoli are tiny air sacs within the lungs where the exchange of oxygen and carbon dioxide takes place (p. 84).

7) Analgesia: The inability to feel pain (p. 40).

8) Aneurysm: A localized abnormal dilatation of a blood vessel (p. 108).

- 9) **Angina Pectoris:** Chest pain that is due to an inadequate supply of oxygen to the heart muscle. Classically it may be severe and crushing with a feeling of pressure and suffocation just behind the sternum. It may have other less typical symptoms (p. 71).
- 10) **Angiodysplasia:** A malformation of the blood vessels tract that may result in bleeding (pp. 114, 115).
- 11) **Anomia:** Absence of the ability to remember the name of objects (p. 55).
- 12) **Antagonist:** A drug that competitively blocks the action of another drug (p. 41).
- 13) **Anticoagulate:** To thin out blood either preventing clot formation or resulting in the dissolving of existing clots (p. 59).
- 14) **Aortoenteric Fistula:** Abnormal tube-like structure that connects the aorta and the intestines (p. 109).
- 15) **Aphasia:** Inability to speak (pp. 55, 98).
- 16) **Apoplexy:** A stroke (p. 52).
- 17) **Aseptic:** Free from germs or microorganisms (p. 168).
- 18) **Aspirate:** To draw in or out by suction (p. 87).
- 19) **Assisted Living:** A type of long-term care facility for elderly or disabled people who are able to get around on their own but who may need help with some activities of daily living (p. 157).
- 20) **Ataxia:** Defective muscular coordination affecting voluntary muscle groups. This results in difficulty ambulating or clumsiness using the effected muscles (pp. 58, 98).
- 21) **Atrial Fibrillation:** Abnormal irregular heart rhythm which involves the inability of the atrial chambers of the heart to contract in a coordinated fashion (p. 59).
- 22) **Autonomy:** The rights of patients to make decisions about their medical care without their health care provider trying to influence the decision, and the health care provider respecting their rights(pp. 19, 27).
- 23) **AVPU:** A mnemonic that describes levels of consciousness from normal alertness to unresponsive to any stimuli (p. 135).
- 24) **Baseline Level of Function:** Information from which to assess patient's abilities and measure improvements or changes (pp. 5,156).
- 25) **Beneficence:** Doing good by restoring health and relieving suffering as well as withdrawing or withholding treatment based on the assessment of benefit versus burden (p. 27).
- 26) **Benefit versus Burden:** An assessment to determine if a patient would endure too much suffering in order to gain very little benefit (pp. 28, 33).

- 27) **Benign Positional Vertigo:** A balance disorder that results in the sudden onset of dizziness when moving the head (p. 99).
- 28) **Cardiac Adrenergic Receptors:** Receptors on cardiac cells that affect heart rate (p. 67).
- 29) **Cardiac Output:** The amount of blood that is pumped by the heart per minute (pp. 67, 68, 74).
- 30) **Cerebrovascular Accidents (CVA):** A stroke (p. 52).
- 31) **Cincinnati Stroke Scale:** Tool used to screen for acute and measure the severity of symptoms (p. 7).
- 32) **Circumferential:** Going all the way around a given body part (p.61).
- 33) **Cognitive:** The process of knowing, being aware, thinking, learning and judging (p. 134).
- 34) "Coma Cocktail": Administration of Thiamin, Glucose and Naloxene in patients who are not responsive (p. 41).
- 35) Comfort Care Measures: Actions that will ease pain and suffering without necessarily prolonging life (p. 24).
- 36) Competence: A legal term referring to the ability of a patient to make a free or informed decision (p. 19).
- 37) Concussion: Head trauma causing disruption of normal cognition without associated bleeding (p. 142).
- 38) Confabulatory: Making up words (p. 146).
- 39) Confusion Assessment Method (CAM): Diagnostic test to determine if patient has delirium (p. 140).
- 40) Congestive Heart Failure: Failure of the heart to pump blood with normal efficiency (pp. 68, 69).
- 41) Conjunctiva: A thin clear moist membrane that coats the inner surfaces of the eyelids and the outer surface of the eye (p. 116).
- 42) Cranial Nerves: The twelve nerves that emerge from or enter the skull, directly from the brain (p. 55).
- 43) Critical Action: Important next step critical to the appropriate treatment of the patient (p. 96).
- 44) Dead Bowel: Having a portion (or all) the length of the intestines dead due to lack of blood supply (p. 124).
- 45) Delirium: An acute global disorder of cognition and attention, abnormal vital signs and a disturbed sleep-wake cycle (p. 139).

- 46) Delusions: A false personal belief that is not subject to reason or contradictory evidence and is not explained by a person's usual cultural and religious concepts (p. 19).
- 47) Dementia: Significant loss of intellectual abilities such as memory capacity, severe enough to interfere with social or occupational functioning (p. 137).
- 48) Dementia Unit: A care facility where a specific type of care is required for activities of daily living and patient safety that is reserved for patients with the diagnosis of dementia (p. 157).
- 49) Diaphoresis: Sweating (pp. 66, 98).
- 50) Distracting Injury: An injury that focuses all a person's attention therefore resulting in lack of attention to other possibly significant injuries (p. 100).
- 51) Diverticulitis: The inflammation of diverticulum in the intestine.
A major cause of lower GI bleeds (p. 115).
- 52) **Diverticulum**: A small pocket that develops in the lining of the intestinal tract (p. 120).
- 53) "**Do-Not-Resuscitate (DNR) Order**": A directive expressing the preference of the patient or their surrogate, to withhold any heroic measures to save the patient's life. Those measures may be specified, finite or all inclusive (p. 20).
- 54) **Dura**: The brain's hard or fibrous tissue-like covering (p. 142).
- 55) **Durable Power of Attorney for Health Care**: A legal document that names a given individual as the patient's surrogate to make health care decisions for the patient if the patient is unable to do so (p. 20).
- 56) **Dysequilibrium**: Unstable equilibrium (p. 99).
- 57) **Dyspnea**: Difficult or labored breathing; shortness of breath (p.67).
- 58) **Dysrhythmias**: Abnormal heart rhythms (p. 98).
- 59) **Elder Neglect or Abuse**: The physical, sexual, or emotional abuse of an elderly person, usually one who is disabled or frail (p. 97).
- 60) **Embolism**: Obstruction of a blood vessel by a foreign substance or a blood clot (p. 59).
- 61) **Epidural Hematoma**: A collection of blood from vessels between the outside of the dura and under the skull. It typically forms quickly and causes rapid deterioration to coma (p. 142).
- 62) **Euphoria**: A feeling of joy or well-being (p. 40).
- 63) **Extrinsic Falls**: Falls caused by the external environment, e.g. tripping on a rug (p. 96).
- 64) **Fecal Emesis**: Vomiting of fecal material (p. 129).
- 65) **Fistula**: An abnormal passageway or connection between two structures in the body (p.109).

66) **Glasgow Coma Score (GCS):** An assessment tool for levels of consciousness (p. 135).

67) **"Guarding":** Bodily defense mechanism preventing pain or movement of injured parts by tightening the muscles over the injured area (p. 107).

68) **Hallucinations:** A profound distortion in a person's perception of reality, typically seeing or hearing things that are not truly there (p. 19).

69) **Hemorrhagic Stroke:** Stroke caused by a rupture of a blood vessel in the brain (p. 51).
Glossary

70) **Hepatotoxicity:** Liver toxicity (p. 42).

71) **Hypertensive Encephalopathy:** Stroke in extreme hypertension (p. 59).

72) **Hypertympanitic:** A tight hollow drum-like sound made from tapping on a distended (swollen) abdomen (p. 129).

73) **Hyperventilation:** Overbreathing (p. 42).

74) **Hypoventilation:** The state in which a reduced amount of air enters the alveoli in the lungs, resulting in decreased levels of oxygen and increased levels of carbon dioxide in the blood. Hypoventilation can be due to breathing that is too shallow or too slow or to diminished lung function (p. 42).

75) **Implied Consent:** A concept that presumes the average person would expect assistance even though they may be unable to physically consent to treatment (p. 27).

76) **Intermediate Care:** Long-term care facility usually for individuals able to function on a level where they do not require total care (p. 157).

77) **Intrinsic Falls:** Falls that occur from within the patient due to weakness, illness or loss of function (p. 96).

78) **Ischemic Stroke:** A stroke in which a blockage of a blood vessel in the brain causes a lack of blood flow to the brain (p. 51).

79) **Living Will:** A legally recognized document that delineates the patient's wishes regarding his/her medical care should they become permanently incapacitated or terminally ill and unable to speak for themselves (pp. 20, 22).

80) **"Lucid Period":** Period of time where a patient is aware and cognitive immediately following trauma causing loss of consciousness and preceding a second episode of loss of consciousness (p. 142).

81) **Mechanical Falls:** Falls caused by the external environment, e.g. ice, a rug, etc. (p. 96).

82) **Mental Status:** The level of a patient's mental alertness (p. 55).

- 83) Metastatic Cancer: When cancer cells spread from one part of the body to another and cause secondary tumors (p. 44).
- 84) Miosis: Abnormal contraction of the pupil (pp. 40, 45).
- 85) Myocardial Infarction: A heart attack (p. 66).
- 86) Neuropathy: Loss of sensation of specific nerves (p. 99).
- 87) Non-Opioid: Pain medications that are not derived from the compound opium (p. 39).
- 88) Non-Skilled Nursing: Care facility where patient needs assistance in activities of daily living but not assistance of a medical nature (p. 157).
- 89) Obstruction: Blockage of a passageway (p. 99).
- 90) Obtundation: Mentally dulled but able to respond (p. 41).
- 91) Occult Bleeding: Blood not readily seen without chemical aids (p. 100).
- 92) Opioid: Pain medications that are derived from the compound Opium such as Morphine and Codeine (p. 39).
- 93) Pain Out of Proportion: Severe pain without physical findings that would normally indicate pain (pp. 125, 128).
- 94) Palliative Care: Medical or comfort care that is administered only to relieve suffering and not expected to effect a cure of the disease (pp. 38, 43).
- 95) Palpitations: Irregular heart beats (p. 98).
- 96) Parkinson's Disease: A slowly progressive neurologic disease characterized by an inexpressive face, tremors, slow voluntary movements, and a gait with short accelerating steps (p. 99).
- 97) Peritonitis: Inflammation of the lining of the abdominal space (p. 107).
- 98) Pharmacologic Catecholamines: A series of drugs that increase the heart rate (p. 67).
- 99) Physiologic Decline: Loss of function (p. 4).
- 100) Physiologic Reserve: Ability to tolerate disease, illness or other physical stressors (p. 5).
- 101) Pleura: The lining around the lungs (p. 87).
- 102) Pleuritic Chest Pain: A sharp, momentary chest pain that occurs due to stretch of the pleura when the patient takes a breath (p. 87).
- 103) Prehospital Advance Directive (PHAD): Standardized forms that allow patients or their surrogate to express their desire for care in the prehospital setting, and meant to prevent EMS from beginning unwanted resuscitative efforts (pp. 20, 22).

104) Prehospital Do-Not-Resuscitate (DNR) Order: A legal directive expressing the preference of the patient or their surrogate, for no heroic lifesaving measures to be used in the pre hospital setting (p. 23).

105) Pulmonary Edema: Fluid in the lungs to the point where the lungs are not functioning for adequate oxygen delivery to the patient. A more extreme form of congestive heart failure (p. 69).

106) **Resuscitative Status:** Refers to patient's wishes for care (p. 1S).

107) Retrograde **Amnesia:** Loss of memory for events occurring before a specific traumatic occurrence or illness (p. 97).

10S) "**Rigid Abdomen**": When abdominal muscles tense and tighten becoming as hard as a wooden board. An extreme form of abdominal guarding (p. 107).

109) **Ruptured Viscus:** The erosion of any intra-abdominal hollow resulting in the organ contents being open to the abdominal cavity (p. 120).

110) **Self-Determination:** The right of patients to make decisions about their medical care without their health care provider trying to influence the decision (p. 19).

111) **Sentinel Event:** An unexpected occurrence involving death or serious physical injury, psychological injury, or the risk thereof (pp. 10, 12, 96).

112) **Silent Ischemia/Silent Myocardial Infarction:** A heart attack without chest pain (p. 71).

113) **Sinus Node Dysfunction:** The inability of the sinus node of the heart to trigger the heart beat in a normal manner (p. 67).

114) **Skilled Nursing:** Care facility where continuous nursing care is required (p. 157).

115) **Stable Angina:** Angina that occurs with exercise and is predictable and controllable (p. 90).

116) **Strangulation:** Compression or constriction of an organ resulting in lack of blood supply causing the inability of oxygen or contents to circulate (p. 99).

117) **Stroke:** A dysfunction of the brain caused by a sudden interruption of its blood flow (p. 51).

11S) **Stroke in Evolution:** A stroke happening as you witness it (pp. 53, 54).

119) **Subdural Hematoma:** Blood collecting under the dura matter between the dura and the brain (p. 142).

120) **Sundowning:** The sudden onset of confusion common in patients with dementia. A worsening in behavior occurring when there is a change in the patient's environment that interferes with their ability to orient themselves. This is typically seen at sundown, when the lights go down or with a change in the patient's living space (p. 13S).

- 121) Superior Vena Cava: A large vein that receives blood from the head, neck, upper extremities and thorax, and empties it into the right atrium of the heart (p. 30).
- 122) Surrogate: An individual designated to make decisions on behalf of a patient if the patient is unable (pp. 18, 20).
- 123) The Impartiality Test: An approach used for ethical problems not covered by law or protocol in which the EMT asks him/herself if he/she would want the same care if they were in the patient's situation (p. 28).
- 124) The Interpersonal Justifiability Test: An approach used for ethical problems not covered by law or protocol in which the EMT must be able to justify their actions to other healthcare providers (pp. 28, 29).
- 125) "The 1% Rule": The theory that as we age, our organs lose 1 % of their ability to function each year (p. 5).
- 126) The Universalizability Test: An approach used for ethical problems not covered by law or protocol in which the EMT determines if all EMT's would act in a similar way in similar circumstances (p. 28).
- 127) Tolerance: Decreased effectiveness of a medication with continued use (p. 40).
- 128) Transient Ischemic Accident (TIA): A neurological event with the signs and symptoms of a stroke, but which go away within a short period of time (p. 52).
- 129) Unstable Angina: Angina that has changed to a more frequent and severe form (p. 90).
- 130) "Uprighting Reflex": The ability to react and adjust to the forces that disturb footing and balance thereby regaining one's balance prior to a fall. (p. 94).
- 131) Ventricular Compliance: Stiffness of the relaxed ventricle of the heart (p. 67).
- 132) Vertebral Nerve Roots: Nerves extending from the spinal column (p. 109).
- 133) Vertigo: A feeling of dizziness (p. 99).
- 134) Volvulus: A twisting of the intestine causing severe dilatation of the organ which may result in strangulation or perforation of the intestine (p. 120).

ABOUT THE PRIMARY AUTHOR

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Dr. Teresita M. Hogan graduated from the Emergency Medicine Residency at the University of Illinois. Early in her career, she was the education director for Infinity Health Care at St. Francis Hospital in Evanston. She then moved to Resurrection Medical Center where she became the founding director of the Resurrection Emergency Medicine Residency Program. As the program's director, she has graduated over 70 emergency physicians who are now practicing in 23 states across the country. Dr. Hogan's residency is known to produce excellent clinicians. It is well-respected nationally and has a productive clinical research department. Through the

residency, the emergency departments at Resurrection Health Care have excelled. Resurrection's Emergency Department provides quality medical care to large numbers of elder patients.

Dr. Hogan is a nationally-recognized expert in the field of Geriatric Emergency Medicine. She has published extensively on the topic, leading to improved care of older emergency patients. One of her areas of concentration has been EMS care of the geriatric patient and why we need EMS-G. Dr. Hogan teaches that geriatric patients should be considered a special subset of EMS patients, requiring different treatment protocols and care. She is the American College of Emergency Physicians' representative to the American Geriatric Society. She is also on the Society of Academic Emergency Medicine Geriatric Task Force.

Dr. Hogan is an associate professor of Emergency Medicine at the University of Illinois, Chicago. She continues her work as an educator and advocate for emergency elder patient issues.

Dr. Hogan and her husband are the proud parents of twins Ryan and Katherine. They also raise Paso Fino horses and are avid equestrians.