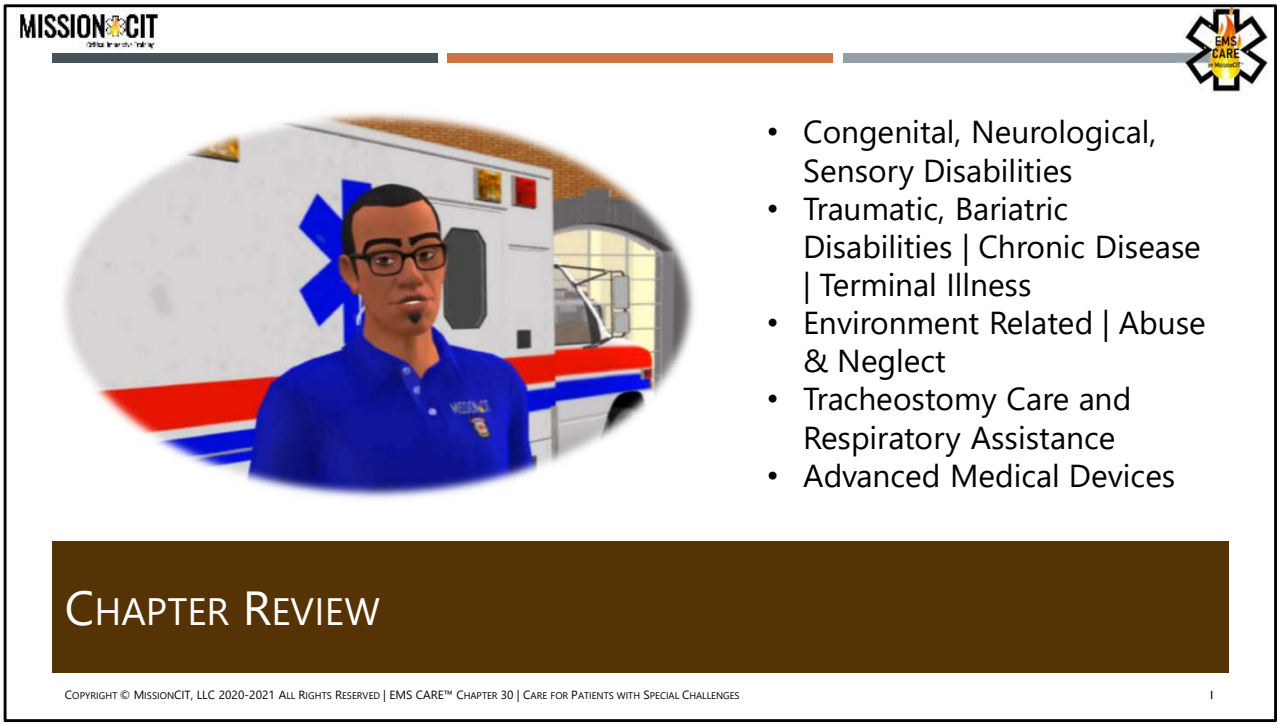


Thank you Missah. In preparation for the upcoming quiz, we now review key takeaways from each lesson in the chapter. We reexamine

- Lesson 2: Congenital, Neurological and Sensory Disabilities.
- Lesson 3: Traumatic and Bariatric Disabilities Chronic Diseases and Terminal Illness.
- Lesson 4: Environment Related challenges along with Abuse and Neglect.
- Lesson 5 which covered Tracheostomy Care and Respiratory Assistance, and

- Lesson 6 discussed Advanced Medical Devices for Technology Assisted and Dependent Patients.

Good studying.

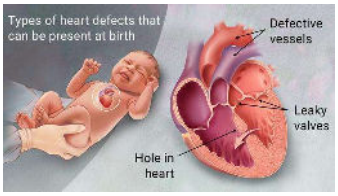
Congenital Diseases

- Down Syndrome
- Cerebral Palsy
- Cleft Lip & Palate
- Congenital Heart Disease




Unilateral cleft lip and palate incomplete


Unilateral incomplete



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Down Syndrome is a Genetic chromosomal defect during fetal development. It causes mild to severe intellectual impairment. Note that Intubation may be difficult due to large tongues and small oral and nasal cavities.

Cerebral Palsy is a group of disorders characterized by poorly controlled body movement. Be sure to Observe the patient's airway closely and suction as needed. And Remember that underdeveloped limbs are prone to injury.

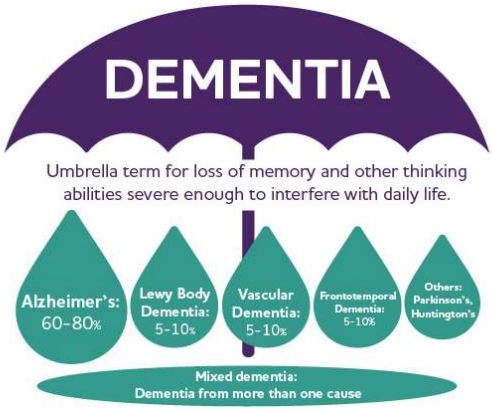
Cleft Lip & Palate creates difficulty feeding. Common conditions are ear infections, hearing loss, and Dental

problems.

Congenital Heart Disease symptoms include Abnormal heart rhythms, blue-tinted skin, and shortness of breath. Complications that might also develop years after a patient receives treatment. And may include arrhythmias, which when severe may cause a stroke or sudden cardiac death if not treated.

Neurological Disabilities

- Developmental Disability
- Intellectual Disability
- Age related challenges



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There are four main types of developmental disorders: nervous system, sensory-related, metabolic and degenerative disorders.

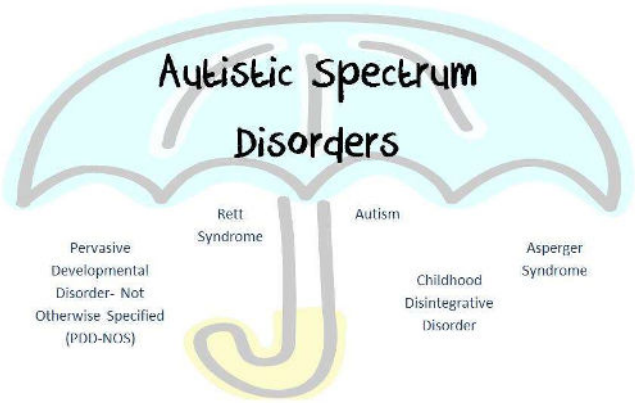
Intellectual Disability is the inability to learn and socially adapt at a normal developmental rate. Patients often have difficulty adjusting to change or a break in routine. They also may not have the ability to care for themselves, communicate, understand, or respond to surroundings

Age related challenges include

- Dementia which is a group of conditions characterized by impairment of at least two brain functions, such as memory loss and judgment.
- Alzheimer's disease which is an irreversible, progressive brain disorder that slowly destroys memory and thinking skills and, eventually, the ability to carry out the simplest tasks.
- Ischemic strokes are caused by a loss of blood flow to the brain due to aging.
- Epilepsy is a central nervous system disorder in which brain activity becomes abnormal, causing seizures or periods of unusual behavior. And finally,
- Parkinson's disease is a progressive nervous system disorder that affects movement.

Autism Spectrum Disorder

- Developmental disorder characterized by impairment of social interaction
- Wide spectrum of disability
- May need to modify assessment techniques and treatment protocols
- Awareness, Keep things Basic
- Calm, Patient Safety



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Autism spectrum disorder is a condition related to brain development, that impacts how a person perceives and socializes with others. Hence causing problems in social interaction and communication.

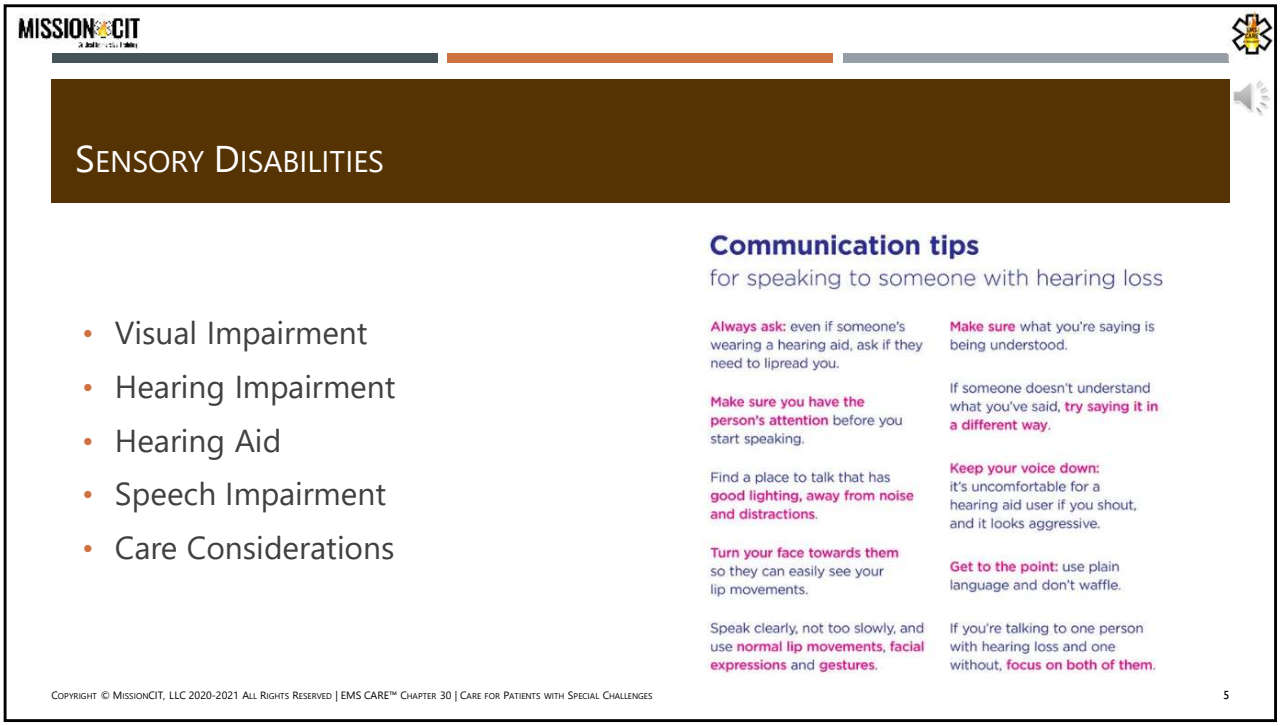
Symptoms may include severe behavioral problems and repetitive motor activities. Patients also show pain in unusual ways, such as humming, singing, and removing clothing. Often, there is Impaired verbal and nonverbal skills. Also, the patient may be hyper or hypo-sensitive to sensory stimuli.

Patients with an autism spectrum disorder will not

behave or react in the same manner as most patients do. They are best cared for by avoiding sensory, emotional, or cognitive overstimulation.

These patients may not offer typical complaints, may have a very high pain thresholds, and may choose to engage in a pleasurable activity rather than deal with an obvious injury or medical condition, despite the discomfort.

Therefore, the EMT must adapt their approach to the patient in four areas: (1) Awareness, (2) Keep communications basic, (3) Stay calm and display calmness, and (4) assure patient safety.



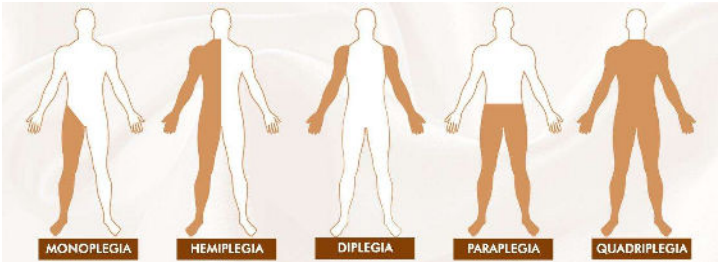
Visual impairment is any kind of vision loss, whether it's someone who cannot see at all, or partial loss of sight. EMT care considerations include making yourself known when you enter, introducing yourself and your team, and allowing a blind patient to touch the EMT's face. If transporting, make arrangements for the care or accompaniment of a service animal.

Hearing impairment is usually the result of the inner ear or nerve damage. EMT care considerations are not to speak louder; rather, try lowering the pitch of your voice, and be sure to face the patient to enable lip reading.

When transporting sensory impaired patients, be sure to bring all aids that may be required.

Traumatic Injuries

- Traumatic brain injury
- Spinal cord injury
- Paralysis



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Traumatic brain injury disrupts the normal functioning of the brain. Symptoms include confusion, blurry vision, and concentration difficulty. Behavioral problems may include abnormal laughing and crying, aggression, impulsivity, irritability, and lack of restraint.

Spinal cord injury is Damage to any part of the spinal cord or nerves at the end of the spinal canal. An SCI often causes permanent changes in strength, sensation, and other body functions below the site of the injury.

Paralysis is the inability to voluntarily move body parts. Note that a paralyzed patient's Diaphragm may not

function correctly and require a ventilator. There may be difficulty swallowing requiring suctioning.

Bariatric Disability

- Body Mass Index > 30
- Large patients may have difficulty breathing if you lay the patient in a supine position
- Prevent EMT back injuries
- Look for pinch or pressure points from equipment (deep venous thrombosis)
- Plan egress routes

BARIATRIC AMBULANCE

Southside Fire and EMS has purchased a special-order ambulance that can accommodate patients who weigh as much as 1,600 pounds. Assistant Chief Tim Genest said the need was brought on by increasingly large patients. So far the ambulance has been used about 1.2 times a day and costs about $120,000 - $35,000 more than traditional ambulances.



A. The rear portion of the ambulance is the largest in the Southside fleet. It's 170 inches long, 98 inches wide and is 72 inches tall inside.

B. An 11-foot ramp stored inside the ambulance pulls out and attaches to the rear of the ambulance.

C. A winch that could pull up to 3,000 pounds attaches to the cot.

D. Specially designed cot that can hold up to 1,600 pounds also has handlebars to help EMTs push and pull the patient.

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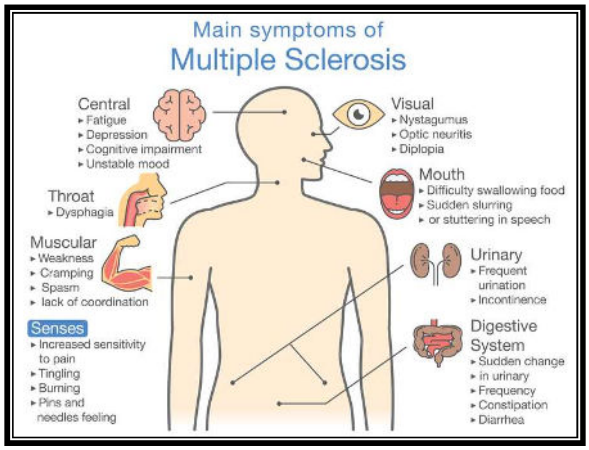
Bariatric or obese patients are defined as having a Body Mass Index greater than 30. The EMT needs to consider that obese patients may have difficulty breathing if laid in a supine position. Look for pinch or pressure points from equipment to avoid deep venous thrombosis.

Keep in mind that obese patients may be embarrassed by their condition.

When movement or transport is required, plan egress routes, call for extra help as needed. And be careful to avoid EMT back injuries.

Chronic Disease

- Multiple Sclerosis
- COPD
- HIV/AIDS



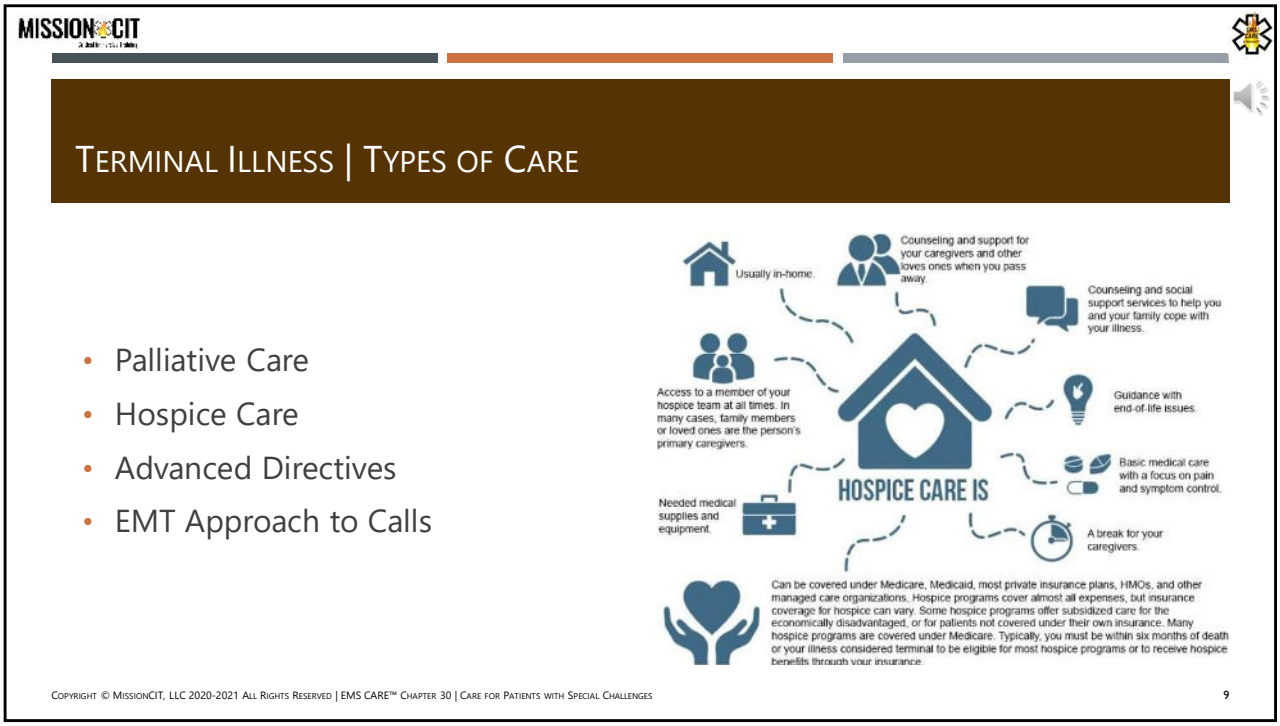
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Multiple Sclerosis is an unpredictable disease of the central nervous system that disrupts the flow of information within the brain. An MS patient on medication can have a seizure that requires a hospital setting. Note that Advanced patients may have a DNR.

COPD causes obstructed airflow from the lungs. Care considerations are generally to administer oxygen, bronco-dilators, corticosteroids, and C-PAP. Consider capnography during the secondary assessment.

Human immunodeficiency virus attacks cells that help the body fight infection. If left untreated, HIV can lead to

the disease of AIDS. The EMT must have PPE protection when dealing with HIV patients.



Terminal illness or end-stage disease cannot be cured or adequately treated, and is reasonably expected to result in the death of the patient.

Palliative Care is an approach that improves the quality of life of patients and their families, facing the problem associated with a life-threatening illness.

Hospice Care is medical care to help someone with a terminal illness live as well as possible.

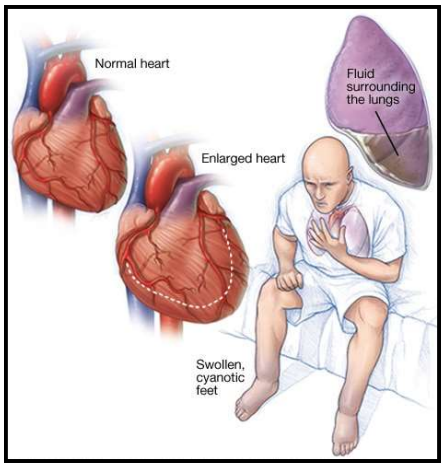
When presented with a terminally ill patient the patient, caregiver or family must make the EMT aware and

present a valid non-hospital DNR order or POLST or MOLST forms. If no advance directive, follow local protocol per the nature of the call.

Contact medical control for guidance when there is a conflict between the family's wishes and an advanced directive.

Terminal Diseases

- End stage cancer
- Congestive Heart failure
- Renal Failure
- Huntingdon Disease
- ALS



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10

End stage cancer patients may have profound weakness, needing help with nearly everything, disinterest in food, and trouble swallowing medicines.

End stage Congestive Heart failure Symptoms may include Dyspnea, Chronic Cough, Edema, Lack of Appetite, High Heart Rate and Confusion.

End stage Renal Failure patients may exhibit Nausea, Vomiting, fatigue, weakness, twitches, cramps, edema, itching, chest pain and shortness of breath.

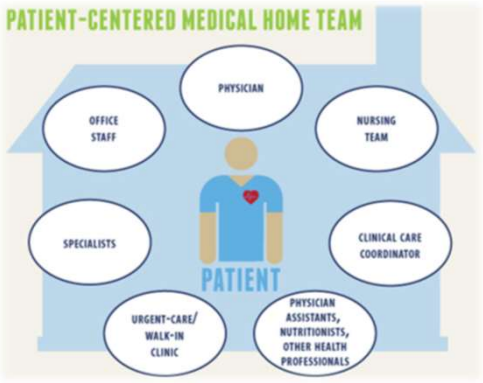
Huntington's disease is a rare, inherited disease that

causes the progressive degeneration of nerve cells in the brain.

Amyotrophic lateral sclerosis or ALS, is a progressive nervous system disease that affects nerve cells in the brain and spinal cord, causing loss of muscle control.

Environment Related Considerations

- Types
- Caregivers
- Home Care
- Advanced Medical Devices in the Home



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The EMT will be called to all types of health care related facilities and residences including Assisted Living, Private residences, and Nursing homes. In addition, there are many specialized rehabilitation centers for stroke, traumatic brain injury or spinal cord injuries. And you may be called to specialized care facilities for patients with down syndrome, developmental or intellectual disabilities.

Home care is no longer just the family attending to the needs of a loved one. Rather it has become a business on its own, with various providers delivering a suite of

services. And in the home, you will encounter advanced medical devices you may be called on for support.

Homelessness & Poverty

- Homelessness, Transience
- Poverty
- Care Considerations
- Patient Advocacy



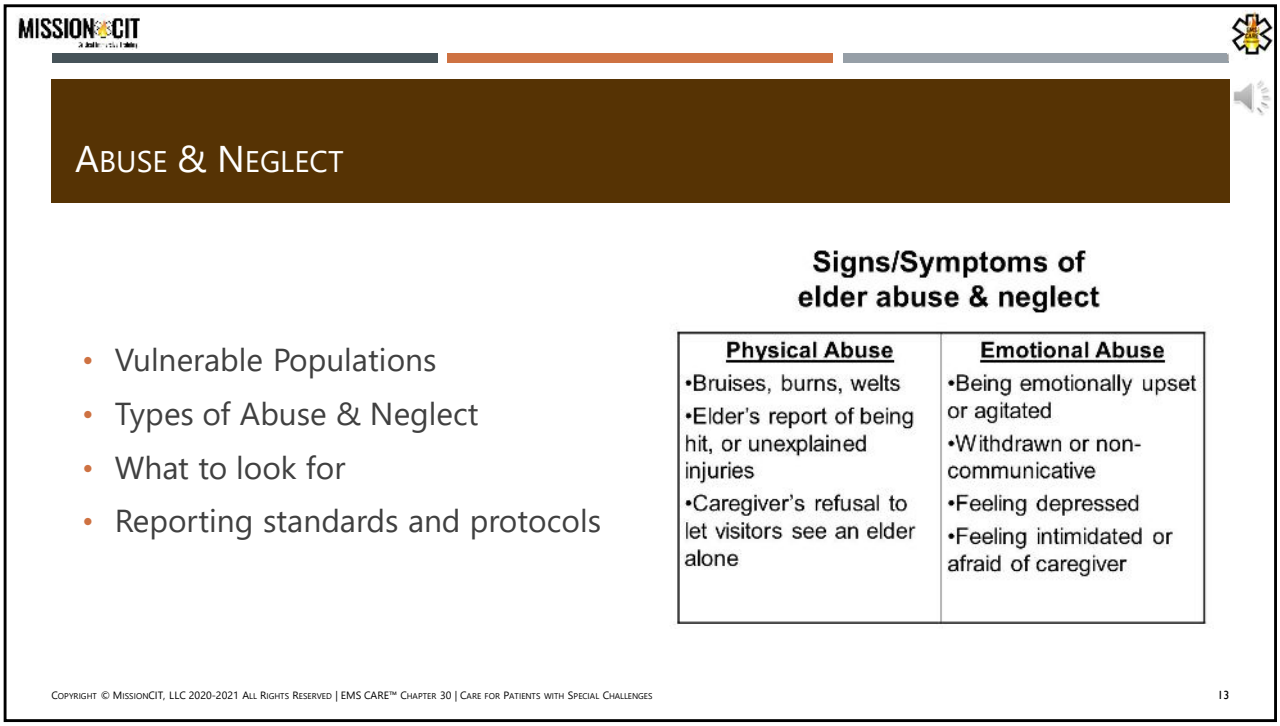
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Homeless and poverty-stricken patients are generally unable to provide for their basic needs. The population often includes individuals with mental illness, prior brain trauma and addiction disorders. There is often a higher incident of Cardiac-Related, Respiratory and Gastrointestinal Conditions, as well as complications from alcohol abuse and Hepatitis.

They are also frequently Crime and Domestic violence victims.

Remember, that all health care facilities must provide assessment and treatment regardless of the patient's

ability to pay. Take the time to understand your local protocols and become familiar with social services resources within your community.



Abuse and neglect most often occur when individuals are in circumstances more vulnerable to physical and sexual abuse, exploitation or neglect. The abuse often occurs at the hands of a caregiver or a trusted person.

Child abuse is described as “Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation”; or “An act or failure to act which presents an imminent risk of serious harm.”

Elder abuse is an intentional act or failure to act that

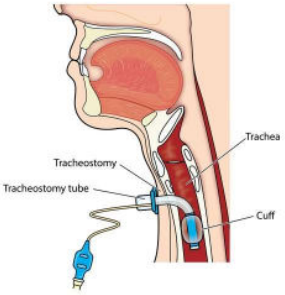
causes or creates a risk of harm to an older adult.

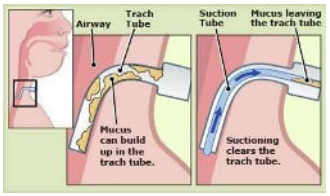
EMTs should be alert for the possibility of abuse during scene size-up, history taking, and assessment.

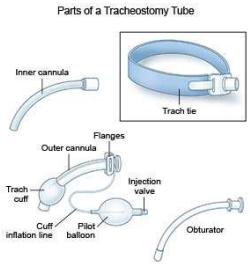
Remember that Mandated reporters must report orally to the Department of Children and Families' Hotline or a law enforcement agency within 12 hours of suspecting that a child has been abused or neglected and must submit a written report within 48 hours.

Tracheostomy Care and Respiratory Devices

- What is a Tracheostomy
- Parts and devices
- Complications
- Oxygen Administration
- EMT Care Considerations







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A tracheostomy is a medical procedure creating an opening in the neck to place a tube into the person's windpipe. The tube is inserted through a cut in the neck below the vocal cords allowing for an alternate path for air to enter the lungs.

Note that the Tracheostomy tube can be blocked by blood clots, mucus, or pressure of the airway walls.

Routine Care includes keeping the stoma clean and dry and suctioning as needed. Be sure only to suction visible mucus plugs to help clear the airway. If the patient's breathing is adequate but exhibits continued signs of

respiratory distress, administer high-flow oxygen via a non-rebreather mask. If breathing is inadequate, assist ventilations using a bag-valve-mask device with high-flow oxygen.

Respiratory Assistance Devices

- CPAP & BiPAP
- Apnea Monitors
- Home Ventilators
- Care Considerations



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C-PAP and BiPap are noninvasive positive pressure ventilation devices that blow oxygen or air under constant low pressure, through a tube and mask. Their purpose is to prevent alveoli in the lungs from collapsing at the end of a breath.

Ventilators are used for patients that cannot breathe on their own. In the home setting, ventilators may also be used non-invasively with a mask. Management of controls is a paramedic level task.

However, if a ventilator malfunctions and there is no ALS support present, use the SCOPE mnemonic for

secondary assessment. SCOPE stands for Suction, Connections, Obstructions, Pneumothorax, and Endotracheal Tube Dislodgement.

If indicated, remove the patient from the ventilator, ventilate manually with a BVM, and make sure the vent tube has no mucus build-up.

Advanced Medical Devices

- Following protocols
- Knowledgeable caregivers
- A knowledgeable patient
- Devices:
  - ✓ Cardiac
  - ✓ Gastrourinary
  - ✓ Neurologic



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So, the first thing when confronted with a patient using an Advanced Medical Device is to understand the severity of the situation. You should know the protocol for the device based on the EMT's level of training, and don't hesitate to call for ALS or medical control as indicated.

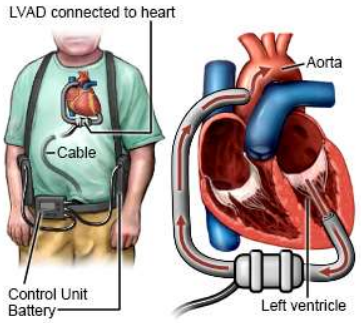
Often, the best resources on a call for a mechanical device failure is the family or caregivers of the patient. They will be most familiar with the machines and devices and will be able to assist you in identifying the cause of a malfunction.

In addition, a responsive coherent patient able to effectively communicate may also be a knowledgeable resource and are often an expert on the device you encounter. They may also relate why the device is required, and its importance to life.

Advanced Medical Devices | Cardiac

- Pacemaker
- AICD
- Defibrillator Vest
- LVAD
- Care Considerations





Left Ventricular Assist Device (LVAD)

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A cardiac pacemaker generates electrical impulses delivered by electrodes to regulate the function of the electrical conduction system of the heart.

An implantable cardioverter-defibrillator (ICD) is able to perform cardioversion, defibrillation, and pacing of the heart. The device can correct most life-threatening cardiac arrhythmias.

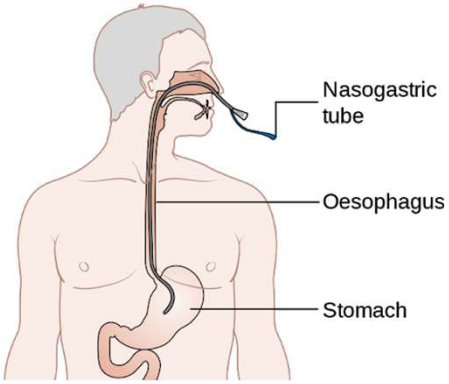
An External Defibrillator Vest is often used as a bridge to an AICD implantation or transplantation. Another bridge device for even more serious transplant candidates is the

Left **Ventricular** Assist Device.

For LVAD patients, remember that the Patient has no Pulse or Blood Pressure and CPR SHOULD NOT BE PERFORMED UNLESS DIRECTED. Get connected to ALS and VAD support as soon as you suspect an issue that may require help.

Gastrourinary Devices

- Feeding Tubes
- Urinary Catheters
- Ostomy Bags
- Central IV Catheters





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Feeding tubes are used in patients who cannot feed themselves or who cannot swallow. Nasogastric and gastronomy tubes are the most common.

Likely problems include dislodgement, infection, and clog. When clogged, assess for symptoms of bleeding into the stomach.

A urinary catheter is used to empty the bladder and collect urine in a drainage bag. The most familiar are in-dwelling Foley catheters. The external tube is connected to a collection bag. The bag may be strapped to the patient's leg, or a large drainage bag on the side of the

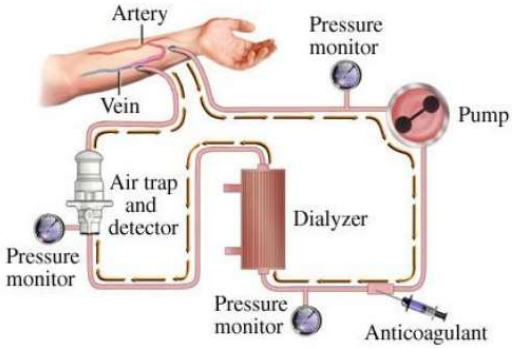
bed.

Ostomy allows bodily waste to pass through a surgically created stoma on the abdomen into an ostomy bag. Check for signs of dehydration if the patient has been complaining of diarrhea or vomiting.

A central venous catheter is placed into a large vein. They are often needed in critically ill patients, or in those requiring prolonged intravenous therapies.

DIALYSIS

- Patient has renal failure
- Dialysis replaces functions of kidney
- Waste removal and fluid removal
- Hemodialysis
  - ✓ Devices: A/V Shunts, Fistulas, Grafts
- Peritoneal dialysis



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Dialysis is a procedure to remove waste products and excess fluid from the blood when the kidneys stop working properly. It often involves diverting blood to be cleaned to a machine.

Hemodialysis is a procedure where a dialysis machine and a special filter called a dialyzer, are used to clean the patient's blood, Usually at a dialysis center.

Peritoneal dialysis is a type of dialysis that uses the peritoneum in a person's abdomen as the membrane through which fluid and dissolved substances are exchanged with the blood. A Permanent catheter is

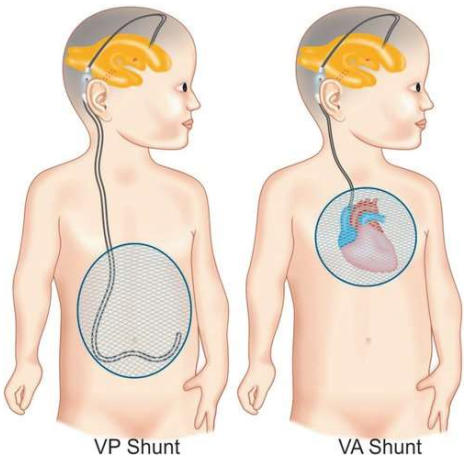
implanted through the abdominal wall into the peritoneal cavity.

Common complications dialysis patients experience include bleeding from an A-V fistula, dislodging of the catheter, infection, or peritonitis. Be sure to not take blood pressure on any arm with an A-V shunt, fistula, or graft.

Be hyperaware that the rupture of a shunt, fistula, or graft will cause fast and significant blood loss.

Neurological Devices

- Ventricular shunts are used to drain cerebrospinal fluid into extra-cranial spaces
  - ✓ VP Shunt
  - ✓ VA Shunt
- Vagus Nerve Stimulation



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Ventricular shunts are used to drain cerebrospinal fluid into extra-cranial spaces. A shunt provides an alternative fluid pathway through which CSF bypasses an obstruction in the brain, and acts when CSF absorption is impaired.

During assessment, you will likely feel the fluid reservoir beneath the skin on the side of the head, behind the ear. Routine complications are infection, obstruction, and over drainage. Malfunction is most commonly due to a blockage or some obstruction within the shunt system. If detected, the patient needs to be transported to an

appropriate facility.

Vagus nerve stimulation is used as a Treatment for seizures not controlled with medication.

So, that is the end of the review for this chapter. Next up is a test for which you must score 75% or better to obtain credit for this chapter.

Good studying and good testing.