Purpose:
With the aging of our population, the numbers of frail and disabled elderly are increasing dramatically. Many of the frail elderly have multiple medical conditions. For this reason, it is not uncommon for a therapist to receive a referral to treat an individual for one reason, for example, a hip fracture, but find that the individual’s progress is affected by another co-existing condition such as arthritis, chronic obstructive pulmonary disorder, or even dementia. This course will look at the medical complexities that are commonly found in the individuals we treat. In addition, the course will examine how clinicians can incorporate techniques that address the medical complexity and lessen and/or manage its effect on the rehabilitation process.

Learning Objectives:
1. Learners will understand the meaning of medical complexities
2. Learners will be able to identify common medical complexities seen in the geriatric client
3. Learners will understand the basic etiology of common medical complexities seen in the geriatric client
4. Learners will understand how therapy outcomes may be affected by medical complexities
5. Learners will be able to identify possible considerations to be incorporated into the therapy treatment plan as a way to further manage chronic medical complexities and ultimately improve therapy outcomes and patient quality of life

Outline:
A. Introduction
B. Arthritis
   1) Rheumatoid Arthritis
   2) Osteoarthritis
   3) Therapy Implications and Management
C. Chronic Obstructive Pulmonary Disorder
   1) COPD
2) Therapy Implications and Management

D. Heart Disease
   1) Congestive Heart Failure
   2) Coronary Artery Disease
   3) Hypertension
   4) Therapy Implications and Management

E. Progressive Neurological Disorders
   1) Alzheimer’s Disease
   2) Parkinson’s Disease
   3) Therapy Implications and Management

F. Diabetes
   1) Types 1 and 2
   2) Therapy Implications and Management

G. Persistent Mental Health Disorders
   1) Depression
   2) Anxiety
   3) Therapy Implications and Management

H. Chronic Kidney Disease
   1) Kidney disease
   2) Therapy Implications and Management

I. Obesity
   1) Obesity
   2) Therapy Implications and Management

J. Summary

Introduction:
The management of individuals with medical complexities is important to all clinicians who participate in their care. It is apparent that individuals with multiple medical diagnoses present a challenge to therapists, as the effect of the disease other than the one the person is being treated for, can greatly influence the outcomes of the treatment. These other disease processes are sometimes called “co-morbidities”.

“The study of comorbidity is, by definition, the study of inter-relationships: between different diseases and between diseases and age or other health-related sociodemographic variables. Caring for persons with chronic illness is, similarly, the care of heterogeneous populations of individuals with multidimensional medical, psychological and social issues.” (Bayliss, 2004)

We must learn how to reduce the risks involved with each medical complexity as well as increase the opportunity for improved health outcomes in spite of medical complexities. What is a medically complex patient? That has proven hard to define in both the literature and in practice. Most literature on medically complex patients include the diagnoses of depression, diabetes, hypertension and osteoarthritis, but there are other chronic illnesses that also add complexity such as congestive heart failure, chronic obstructive pulmonary disorder and neurodegenerative disorders such as Parkinson’s disease and Alzheimer’s disease. If we look at Medicare expenditures, we will see that
two thirds of those expenditures are used for individuals that have 5 or more chronic conditions such as those listed above. A supplement to the American Journal of Medicine notes that treatment response is affected by variables such as multiple medications, severity of the illness being treated, treatment setting as well as co-morbidities. (Whittle, 2007) According to a study done by Medicare, the most common chronic illnesses in individuals over 65 were as follows:

- arthritis (57%)
- hypertension (55%)
- pulmonary disease (38%)
- diabetes (17%)
- cancer (17%)
- osteoporosis (16%) (Vogeli, 2007)

In addition, 62% of those individuals over the age of 65, have 2 or more of these or other chronic illnesses. Literature also reveals that with each chronic illness there is an increasing risk of functional limitation. One study showed that congestive heart failure, diabetes and/or a chronic respiratory disease (COPD) put individuals at the most significant risk for functional declines. While individuals do benefit from programs that address specific disease management of a particular disease, for example, diabetes, it becomes increasingly complex due to the fact that so many of these complexities are seen in individuals with other complicating illnesses which further increase the risk of functional decline.

Since it is common for therapists to treat clients with more than one disease process, we must understand the effect that various comorbidities can have on the individual. CMS has recognized the presence of comorbidities and their effect on the therapeutic process and recovery. As most therapists are aware, CMS instituted a therapy cap process on outpatient therapy services in an effort control the increasing cost of healthcare for the aging population. This cap allows a certain dollar amount for outpatient therapy services per calendar year for OT, PT and SLP services. CMS instituted an exceptions process to the therapy cap as well. The exceptions process was instituted to allow for possible extension of services based on the presence of certain comorbidities or medical “complexities”. (*Note – This course is not a study of CMS rules regarding the exceptions process. Therefore, it is generally referred to here but by no means is a description of how that process works. For more information refer to the CMS transmittals regarding the therapy cap and exceptions process.) In allowing an exceptions process, CMS recognizes that management of illness and recovery of function may or may not be affected by the presence of certain illnesses and medical complexities that have a direct and significant effect on the therapeutic process. After extensive studies, CMS determined some of those illnesses and medical complexities to be as follows:

- Amputation
- Joint replacement
- Diabetes
- Obesity
- Dementia
- Persistent mental disorders (including anxiety, depression, etc…)
Degenerative diseases of the central nervous system (examples Parkinson’s disease, Huntington’s disease, Alzheimer’s disease, etc…)
Vision and hearing loss
Hypertensive disease
Heart disease
Chronic Obstructive Pulmonary Disease and other diseases of the respiratory system
Renal failure and chronic kidney disease
Rheumatoid arthritis
Osteoarthritis
Contracture of joints
Rotator cuff disorder
Malaise and fatigue
Fractures
Late effects of injuries to the nervous system
Etc…

Of course not all persons who have one of these diagnoses will automatically require additional services. It is up to the clinician to effectively judge and document how the complexity directly and significantly impacts the rate of recovery of the condition being treated. (CMS Transmittal 1145, 2006)

In individuals with illnesses that are complicated by another chronic illness, it has been shown to help when clinicians systematically address both self management and clinician management of the disease process. With this in mind, we will look at a few of the common medical complexities that are seen by therapists on a regular basis and the implications for management of those illnesses.

Arthritis

Introduction to Arthritis:
Arthritis literally means joint inflammation. It refers to over 100 diseases that affect the joints and, in general, cause pain and stiffness. Examples of arthritic illnesses include childhood arthritis, fibromyalgia, osteoarthritis, rheumatoid arthritis, and systemic lupus erythematosus. The two most common types of arthritis are rheumatoid arthritis and osteoarthritis. (CDC, January 2008) Rheumatoid arthritis affects 1.3 million people in the U.S. and osteoarthritis affects 27 million people in the U.S.

Rheumatoid Arthritis (RA) is a disease that causes inflammation in the lining of the joints. The inflammation usually occurs symmetrically, ie, affecting the same joints on both sides of the body. The inflammation leads to a thickening of the lining and ultimately to changes in the shape and alignment of the bone and cartilage. It is a chronic illness and can lead to other systemic changes as well. The cause of RA is not fully understood. It is thought to be an autoimmune disorder in which the body attacks its own healthy tissues. It is also known that women are 2 to 3 times more likely to develop RA
than men. RA typically begins in one of the small joints of the hands. Common symptoms are:

- Pain
- Stiffness
- Fatigue
- Weakness

Diagnosis can be difficult and the doctor may ask questions such as, “Do you have pain in your hands, wrists or feet?” “Does the pain occur on both sides of the body?” “Have you had times of feeling weak and fatigued?” A physical examination would include looking for joint swelling, tenderness and loss of motion. In addition, the doctor would look for more obvious signs such as joints being out of alignment. Other tests that help to confirm a diagnosis of rheumatoid arthritis include lab tests to determine:

- Blood counts
- Sed Rate
- C-Reactive protein
- Rheumatoid factor
- Antinuclear antibodies

Treatment options include medications, surgery and treatment from other healthcare professionals (OT, PT, Nursing).

**Osteoarthritis** (OA) is a chronic condition which occurs when there is a breakdown in the cartilage between joints. It affects both men and women, but is more common in women. Cartilage acts as a cushion between the joints so when it breaks down it causes bones to rub together which then leads to joint pain and stiffness. Due to “wear and tear”, the cartilage begins to lose its elasticity and pieces of both bone and cartilage can become dislodged and cause irritation in the joint. In addition, there can be a lessening of fluid in the joint which adds to the irritation. Osteoarthritis is a common result of aging however there are some risk factors which can cause a worsening of symptoms. These are:

- Obesity
- Injury
- Heredity
- Muscle weakness
- Rheumatoid Arthritis
The joints most commonly affected by OA are the knees, hips, fingers, neck and lower back. Many people with OA only have mild symptoms such as occasional mild to moderate pain that does not stop them from completing normal activities. Others have a more intense form that can interfere with basic activities such as walking and sleeping. The most common symptoms of OA include:

- Joint soreness
- Joint stiffness, especially in the morning
- Joint pain, increases as the day goes on
- Poor coordination and posture
- Difficulty walking
- Enlarged joints
- “Grating” in the joints

Diagnosing OA includes getting a good medical history and physical examination that looks for joint tenderness and swelling as well as loss of movement. Whereas rheumatoid arthritis is typically symmetrical (affecting the same joints on both sides of the body), OA affects joints in an uneven pattern. Other tests may be ordered such as x-rays or an MRI to look for damage to cartilage and bone. Treatment includes exercise, weight control, joint protection techniques, medications and intervention from other healthcare professionals (OT, PT). (Arthritis Foundation, 2008) The National Center for Chronic Disease Prevention and Health Promotion lists the following impact on quality of life for those who suffer from OA:

“OA of the knee is 1 of 5 leading causes of disability among non-institutionalized adults
About 80% of patients with OA have some degree of movement limitation and 25% cannot perform major activities of daily living (ADL’s), 11% of adults with knee OA need help with personal care and 14% require help with routine needs
About 40% of adults with knee OA reported their health as ‘poor’ or ‘fair’”
(CDC, January 2008)
Therapy Implications for Management of Rheumatoid Arthritis and Osteoarthritis

When therapists are seeing an individual that has a complexity of arthritis, the therapist must see what effect the arthritis may have on recovery. Many times, arthritis sufferers will avoid movement because it causes pain when that is the opposite of what they need to do. As this may interfere with recovery, the arthritis management may need to be considered by the therapist. Management of arthritis includes improving strength, tone and overall fitness as well as reducing pain and increasing participation in routine activities. Therapy considerations might include designing an exercise program to minimize joint problems as the disease progresses and to increase or maintain strength and flexibility. The exercise plan should include stretching and flexibility exercises as well as strength and conditioning exercises. It may also be important to teach specific exercises that prevent/reduce joint deformities and / or look at postural stability and positioning to train the individual to relive pressure on the affected joints. In addition, heat and ice can assist with the inflammation (see below). Massage can also assist to decrease pain. Occupational therapy can assist by analyzing tasks that the individual is having difficulty performing and teaching better ways to complete the task so that the task is easier and joints are not stressed. (WebMD, 2006, Physical and Occupational Therapy for Rheumatoid Arthritis) Joint protection techniques that may be useful might include sitting rather than standing to do activities, avoiding postures that put stress on affected joints and teaching good body mechanics, using the stronger muscles to do the majority of the work (example carrying a purse with your forearm instead of with your fingers), and being aware of pain levels so as not to “over-do” any particular activity or movement. It might be for helpful for the therapist to utilize a pain scale to assist in determining the level of pain upon performing certain activities. You can use a rating scale to assist the individual in describing to you how the pain feels most of the time, when it is worst, when it is least and how it changes during your treatment sessions. There are a variety of pain scales that can be used including visual and numeric scales. For the individual who cannot communicate their pain, you may need to use a behavioral scale that includes facial grimacing, withdrawal of extremities, moaning etc…The following link provides an example of some of theses scales (http://www.health.vic.gov.au/qualitycouncil/downloads/app1_pain_rating_scales). Assistive devices may also be indicated as well and can help in decreasing pain as well as increasing independence in various tasks. (WebMD, 2006, Arthritis: Physical and Occupational Therapy) For example, an individual may need grab rails appropriately placed or a raise seat to aid in toileting or bathing. Splinting may also be useful in reducing pain and preventing deformity.

General Tips:

- When utilizing heat or cold a couple of rules should be followed. First, many patients will prefer heat but heat is not always the best choice. The general rule of thumb is as follows, if the joint is warm and swollen, utilize ice to reduce swelling and inflammation. To reduce pain and stiffness, you can utilize heat or cold according to the preference of the individual. Both cold and heat should not be utilized for longer than 15 minutes.
- Exercise should be done daily. The performance of the exercise should be slow, moving through as close to full range as possible and preferably without
resistance. Strength training can be accomplished through the use of isometric exercises. If using exercise bikes, use them cautiously and without resistance.

- If using a cane for arthritic purposes, should be held in the hand opposite the affected joint(s).
- It is important to note that the exercise program must be consistent with the condition of the joint. Too much stress on the joint can cause further inflammation and an exacerbation of the disease process. One article notes that some discomfort may be experienced after exercising, but the discomfort should be no more than a moderate amount and should dissipate after 2 hours.
- It is extremely important that the individual understands the purpose of each activity, adaptation or exercise as unless there is consistent follow-through, the program will be only minimally effective (Clark, 2000)
- Some simple energy conservation techniques include the following: 1) Push or roll heavy objects when possible 2) Sit rather than stand when possible 3) Use lightweight items 4) Arrange commonly used items in accessible places 5) Reduce amount of bending needed 6) Schedule activities so that there is a balance throughout the day
- Joint protection techniques include: 1) Control body weight 2) Change positions frequently 3) Avoid strong pinch and grasp patterns 4) Use larger joints to do majority of the work (University of Illinois)

**Chronic Obstructive Pulmonary Disorder**

Chronic Obstructive Pulmonary Disease (COPD) is an umbrella term for illnesses related to difficulty in lung function such as emphysema, chronic bronchitis and sometimes asthma. It is characterized by a blockage of the airflow due to decreased elasticity in your lungs. Primarily, this affects the lungs ability to exhale air. It is a common ailment and is in fact the 4th leading cause of death in the United States. A major risk factor is a history of smoking but other irritants in the air can also cause COPD. Symptoms include:

- Coughing
- Shortness of breath
- Wheezing
- Increased mucus production
- Tightness in the chest

During the breathing process of inhalation and exhalation, oxygen is transferred into the blood and carbon dioxide is removed. When this flow is disrupted, you do not get enough oxygen and carbon dioxide begins to build up in your body. As stated, the 2 main illnesses associated with COPD are emphysema and chronic bronchitis. In emphysema, the alveoli become inflamed which can lead to partial collapse in airways. In chronic bronchitis the bronchial tubes narrow and mucus forms to further narrow
the passageways. Tests for COPD include the following:

- Pulmonary function tests
- Chest x-ray
- Arterial blood gas analysis
- Sputum examination
- CT Scan (Mayo Foundation 2007)

COPD is often classified into at risk (mild cough and sputum production), mild (cough, sputum production and mild airflow restriction), moderate (cough may have worsened, shortness of breath with vigorous activity, moderate airflow restriction), severe (severe airflow restriction and shortness of breath with mild activity).

Treatment for COPD depends upon its severity. The doctor may recommend either long or short acting bronchodilators. Inhaled steroids may be used to reduce inflammation as the disease progresses. In addition, it is important for the individual with COPD to get regular flu shots to prevent additional respiratory problems that can occur. Pulmonary rehab may be recommended which includes an exercise regime, nutrition changes and education about managing the disease. For some individuals, oxygen therapy will be required to increase the level of oxygen in the blood and decrease symptoms of shortness of breath. Surgery is recommended only for those who have severe COPD and have not benefited from the medications. (National Heart Lung and Blood Institute, 2007)

**Therapy Implications for Management of Chronic Obstructive Pulmonary Disorder**

There are two major components for therapy to consider when dealing with an individual with COPD are physical training and education. Physical training, including endurance and strength training is essential. In addition, education is a large part of the process in managing the disease process. It is not unusual for the person with COPD to completely stop exercising due to breathing difficulties and loss of energy. The therapist has an important role in re-engaging the individual in regular physical exercise. Two common strategies for increasing endurance through exercise are:

1) Determining a time frame for exercise and then gradually increasing the work load, or
2) Determining an intensity or work load and then increasing the amount of time spent in the activity

The intensity or work load may be determined by heart rate but it can also be determined utilizing scales such as the Borg Perceived Exertion Scale (explained more fully under therapy implications for heart disease) or the Shortness of Breath Visual Numeric Scale (Stanford Patient Education Research Center), by measuring a target level of shortness of breath or dyspnea. It is common for individuals with COPD to complain of shortness of breath while using their upper extremities in activities and therefore, upper extremity exercise and functional tasks are important to incorporate into an exercise routine. Strength training can be added as well to the exercise routine.
In addition to physical training, education is important to help in managing the illness. Suggestions for educational sessions with individuals with COPD include:

- Anatomy, physiology, pathology and pharmacology (including oxygen therapy)
- Dyspnea/symptom management, chest clearance techniques
- Energy conservation/ pacing
- Nutritional advice
- Anxiety management
- Goal setting and rewards
- Relaxation
- Identifying and changing beliefs about exercise and health related behaviors
- Exacerbation management (including coping with setbacks and relapses)
- The benefits of physical exercise (British Thoracic Society, 2001)

One of the areas commonly taught by therapists are breathing techniques. Below is a description of three breathing techniques listed in a research article in the Journal of American Physical Therapy Association:

“Diaphragmatic breathing occurs when there is a conscious appreciation of inspiring air to the lung bases with slight forward abdominal displacement and passive relaxed expiration. The instruction given to the participants are "breathe in slowly through your nose and aim at getting the air to the lower part of your lungs; remember to relax your tummy and allow the air to go under here [the investigator put his hand on the subject's epigastric/subcostal region]. Then relax and let all air out through your mouth, allowing your tummy to sink gently."

Pursed-lip breathing in our study consisted of each subject's normal pattern of inspiration, but expiration was performed by gently blowing through "pursed" lips. The instruction we gave was "breathe in through your nose and exhale by blowing gently against your loosely closed lips, like blowing a candle flame so that it bends but doesn't blow out."

The CB (combined breathing) pattern required subjects to have some slight forward abdominal displacement during inspiration and during expiration through pursed lips. The instruction given was "breathe in through your nose, aim at getting the air to the lower part of your lungs; allow the air to go under here [investigator's hand over the subject's epigastric/subcostal region] and breathe out by gently blowing against your loosely closed lips, as if you are blowing a candle flame so that it bends but doesn't blow out." (Jones, May 2003)

Energy conservation and work simplification are other techniques commonly taught to individuals to assist with daily living skills. The Asthma Foundations Australia defines these principles as “completing a task in the most effective and easiest way, using the least amount of energy (in) the shortest possible time.” The principles of energy conservation and work simplification are summarized as follows:

1. **Limiting the amount of work** by eliminating steps that are non-essential. (An example would be washing the dishes but letting them air dry.)
2- **Prioritizing** by doing the most important things first. That may mean making a list of things to do and then beginning to cross off those that don’t have to be done or that someone else can do for you.

3- **Planning ahead** so that you can space out essential tasks as well as determining the best time of day to do certain tasks. Planning also involves making sure you have all the necessary tools to complete a task in an easily accessible location.

4- **Incorporating rest breaks** to help prevent fatigue. Keep a moderate pace when completing tasks and allow for 10 minute breaks as necessary. (Asthma Foundations Australia)

**General Tips:**

- Make sure that the individual who requires oxygen is using it during therapy sessions that may cause exertion.
- During exercise or functional activity, desaturation levels should be monitored and oxygen given if goes below SpO2 ≥ 90 (pulse oximetry).
- In the midst of, or following a treatment session, a simple test of exertion may be utilized by asking the individual to count to five without taking a breath. The person should be able to do this and / or to converse after exercise with only moderate shortness of breath. (Cahalin, 1996)

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**Heart Disease (CHF and CAD and Hypertension)**

**Congestive Heart Failure (CHF)**

Statistics:
1% of people 50 years old have CHF  
5% of people 75 years old have CHF  
25% of people 85 years old and older have CHF

Congestive Heart Failure, also known simply as “heart failure”, is one of the major causes of disability and death in the United States. Before discussing the disease known as CHF, let us look at the major functions of the heart. The heart is an organ that acts as a pump in the body. It pumps blood to the lungs to receive oxygen and it also pumps the oxygenated blood out to the rest of the body. The heart contains 4 sections or “chambers”, and each has a different function. The two chambers on the right side receive and then pump blood to the lungs and the 2 chambers on the left side, receive and then pump blood to the rest of the body. Because the left side of the heart pumps the oxygenated blood to the entire body, it is a stronger “pump” or muscle. The term...
“congestive heart failure”, may conjure up the thought that the heart abruptly stops pumping, however that is not what occurs. What actually occurs is the heart is not pumping efficiently enough to pump the oxygenated blood throughout the body. Because the blood is not circulating efficiently, it begins to back up in the blood vessels and causes fluid to be forced from the blood vessels into parts of the body. (WebMD – Congestive Heart Failure, 2008) It is most common for the left side of the heart to begin to show signs of heart failure first. This involves either the left ventricle being unable to contract or to relax. (AHA, February 2008) When the left side of the heart is failing, fluid is pushed into the lungs causing what is called pulmonary edema. This causes difficulty in breathing and the person may become short of breath with little to no activity. When the right side of the heart is failing, fluid is characteristically pushed into the feet and lower legs. (WebMD – Congestive Heart Failure, 2008) Another reason for the characteristic edema that occurs with CHF is the fact that as the heart pumps less efficiently, the kidneys also are affected decreasing their ability to eliminate sodium, which also leads to increased edema. (AHA, 2007)

Congestive heart failure generally develops over a long period of time. Therefore it is usually a chronic condition. The heart tries to “make-up” for some of the disease process by either the ventricle enlarging to allow for more blood flow, the entire heart increasing in size or sometimes the heart begins to pump faster. In addition, the heart will begin to direct blood flow to the most important organs while restricting it’s flow to less vital organs. (AHA, February 2008)

Causes of CHF include damaged heart valves, weakened heart muscle, blocked blood vessels leading to the heart, fluid around the heart, a thickening of the heart or even an infection. Lifestyles can contribute to CHF, including smoking, chronic alcohol abuse, obesity and other diseases such as diabetes, prior heart attack, and uncontrolled high cholesterol and/or hypertension. In addition, a person can be born with a congenital disorder that weakens the heart and can lead to congestive heart failure.

There are 3 major symptoms of Congestive Heart Failure. As a general rule, there is no chest pain associated with CHF, so many people do not realize they have it until one or more of the following symptoms occur. The first is exercise intolerance. Even the person who was able to exercise in the past may find that even mild exercise becomes too tiring. A simple task such as mowing the lawn, sweeping or even just walking can cause fatigue. The second major symptom is shortness of breath. This shortness of breath can occur during activity or even at rest. It is not uncommon for the individual to have difficulty breathing at night while lying down and they may sleep better if propped up on pillows or sleeping reclined in a chair. Finally, the third major symptom of CHF is fluid retention and swelling. The swelling is common in the feet, ankles and lower legs and in advanced cases can move to the upper legs and even the abdomen. The swelling, also called edema, is a “pitting” edema. In other words, if you press you finger into the skin, the indentation can still be seen when you take your finger away, sometimes for up to a few minutes. The swelling is the result of fluid being retained and then pushed into the body tissues. Often doctors will want regular body weights on these individuals as an indicator of the state of the disease (ie; how much fluid they are retaining).
Tests for Congestive Heart Failure include:

- Chest x-ray
- Electrocardiogram
- Blood tests and electrolyte levels
- Echocardiogram

Treatment for CHF includes making lifestyle changes such as quitting smoking, avoiding excessive alcohol use and maintaining a healthy weight. It is also important to stay active and exercise, but to take appropriate rest breaks. In addition, feet/legs should be elevated as necessary, a salt restricted diet should be followed and a journal of your daily weight kept to track the state of your disease process. Medications that assist with CHF are diuretics, vasodilators, beta-blockers and drugs that assist in the pumping ability of the heart such as Digoxin. A newer therapy that has proved to be successful involves implanting a pacemaker that works on both ventricles of the heart. In severe cases, a heart transplant may be required. (WebMD – Congestive Heart Failure, 2008)

**Coronary Artery Disease (CAD)**

Coronary Artery Disease is the leading cause of death for men and women in the United States. CAD refers to narrowing of the arteries caused by a buildup of plaque. The buildup causes decreased ability of the oxygenated blood to reach the heart as well as an increased risk of the formation of blood clots. CAD is also known by other names such as atherosclerosis, hardening of the arteries or ischemic heart disease. (National Heart Lung and Blood Institute, June 2008) What is ischemia? Ischemia is when an organ does not receive the necessary oxygen that it needs and it causes the muscle to “cramp”. This can occur in the heart muscle during exercise, eating, extremely cold weather or excitement or stress. (WebMD, Coronary Artery Disease, December 2006) Coronary artery disease results from the attempt of the body to repair damage to the lining of arteries. This repair process causes plaque to build-up on the artery wall. This can begin, for some people, even during childhood. What causes some of this damage to artery walls? Some of the more common culprits are:

- Smoking
- Cholesterol
- High blood pressure
- High sugar content in blood

For this reason, common risk factors include obesity, diabetes, blood pressure over 140/90, high bad cholesterol (LDL) and low good cholesterol (HDL), lack of physical activity, and increasing age. Other factors that can also increase your risk for CAD are sleep apnea, stress and excessive alcohol use. It is not unusual for a person with coronary artery disease to have little to no symptoms, especially in earlier stages of the disease. The most common symptom that individuals
complain of is a squeezing or pressure sensation in the chest. This can also be felt in the shoulder, arm and/or back. This type of pain is referred to as angina. (National Heart Lung and Blood Institute, June 2008) Angina can be brought on by both physical and/or emotional stress. And it usually goes away after rest or removal of the stressor. (MFMER – Coronary Artery Disease, 2008) Shortness of breath is also a common symptom and occurs when the heart is not pumping sufficient oxygenated blood to the rest of the body. One of the dangers of coronary artery disease and it’s build-up of plaque in the arteries, is the possibility that the plaque can cause blood clots to form. This not only further narrows the artery, but also increases the risk that the blood clot will break off and cut off blood supply to the heart. This is considered a heart attack and causes irreparable damage to the heart and possibly death. The pain from a heart attack is similar to angina pain. In addition the person may feel nauseous, lightheaded and may experience a cold sweat. (National Heart Lung and Blood Institute, June 2008) For women, pain is many times less intense and the pain may be felt more in the back, jaw or even the abdomen. (MFMER – Coronary Artery Disease, 2008) Coronary artery Disease can also lead to congestive heart failure and arrhythmias. Diagnosing CAD involves some of the following:

- Physical exam, including medical history and review of risk factors
- Electrocardiogram
- Stress Test
- Echocardiography
- Chest x-ray
- Blood Tests

Treatment of coronary artery disease includes, first, making some lifestyle changes. Usually that involves making changes in diet, changes in activity level and quitting smoking if you are a smoker. Diet changes are often difficult for people with CAD. It often involves changing a lifetime of bad eating habits. Diet changes include decreasing the amount of fats consumed, especially saturated fats, and increasing the amount of fiber, fruits and vegetables consumed. In addition, salt and alcohol intake should be limited. Physical activity, such as walking, bicycling and other moderate aerobic activity is important for the individual with CAD. Other treatments can include medications which act in a variety of ways. Medications can act to lower blood pressure and cholesterol as well as reduce the likelihood of blood clots and reduce the effort that is placed on the heart. When lifestyle changes and medications alone do not work, surgery may be indicated. The two most common procedures are angioplasty and CABG. In an angioplasty, a balloon type structure is inserted in your artery to improve blood flow. In CABG, also known as bypass surgery, other arteries are used to “bypass” the obstructed area. (National Heart Lung and Blood Institute, June 2008)

**Therapy Implications for Management of Heart Disease (CHF and CAD)**

Although exercise is important to the individual with chronic heart disease, exercise intolerance is a common occurrence. It is critical that there is a balance between rest and exercise. Dyspnea is a common complaint upon exertion and therefore the level of dyspnea is often utilized to measure the proper level of an exercise program. Scales such as the Borg Perceived Exertion Scale can be used. This scale was developed by Gunner
Borg who offers the following set of instructions to be read or explained to the participant just prior to exercise testing or training:

"During the exercise we want you to rate your perception of exertion. We want you to use this rating scale where 6 means no exertion at all and 20 means a maximal exertion. 9 is a very light exercise, like walking slowly for some minutes (for healthy people). 13 on the scale is a somewhat heavy exercise but it still feels fine, and you should not have any problems to continue exercising. When you come to 17, "very hard", it is really very strenuous; you can still go on, but you have to push yourself very much. 19 on the scale is an extremely strenuous exercise. For most people this is an exercise as strenuous as they have ever experienced before. Try to appraise your feeling of exertion as honestly as possible. Don't underestimate it, but don't overestimate it either. Some people are a bit insensitive or want to be "brave" and rate too low. Don't do that but try to feel your exertion as you perceive it. Don't bother about how heavy the load is physically or what the exercise objectively might be. We are only interested in your own feeling of effort and exertion. Look at the scale and the wordings and then give us a number. You can equally well give us an even as an odd number."

The therapist can then use this information to see the individual’s perceived level of exertion and how it is affected during the course of therapy. A basic guideline would be to reach a moderate level of dyspnea or 11-12 on the Borg Scale (in a healthy individual a moderate Borg level would be 12-14). If the individual complains of any experiences of angina (squeezing, pressure or pain in the chest, shoulder arm or back), the exercise should be halted. You can find a description of the Borg Scale at the following link: http://www.doctorsexercise.com/journal/borg.htm (Scherer, 1999)

Many physicians encourage individuals with heart disease to utilize MET levels to manage their day to day exertion and energy expenditure. Therapists can utilize these same scales to help the resident structure their activity level to meet the demands of their day. “The energy cost of physical activity is a direct outcome of the frequency, duration, and the intensity of human movement performed in a variety of settings.” This energy cost has been sometimes expressed in metabolic equivalency tables (MET) that were developed to create a standard for tracking energy expenditure. One tool created for this purpose is called The Compendium of Physical Activities. Within this resource there are 21 different categories of activities such as home activities, lawn and garden, self care, occupation, sports, etc…Under each category are specific tasks that are assigned a MET intensity (a total of 601 tasks are listed in the table). MET levels are an expression of the amount of work required for a specific activity as compared to the amount of energy required to sit still resting quietly. A MET level 1 is representative of the amount of energy required to sit quietly. A MET level 2, for example, would be representative of requiring 2 times the amount of energy as sitting quietly. Examples of sample MET levels are seen in the following sample chart:

<table>
<thead>
<tr>
<th>Code</th>
<th>METS</th>
<th>Heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02101</td>
<td>2.5</td>
<td>Conditioning exercise</td>
<td>Mild Stretching</td>
</tr>
<tr>
<td>05060</td>
<td>2.3</td>
<td>Home activities</td>
<td>Food shopping, with or w/o grocery cart</td>
</tr>
</tbody>
</table>
The Centers for Disease Control defines light activity as below 3 METS, moderate activity as 3-6 METS and anything over 6.0 METS as vigorous activity. You can access an online full table of all 605 tasks and their MET levels at the following site: 

This information can be helpful to therapists as they treat an individual with this complexity.

Once again, energy conservation principles are an important consideration in the treatment for the individual with a complexity of heart disease. The National Heart Lung and Blood Institute defines energy conservation as the following:

- “Doing things slowly
- Doing things sitting down
- Putting things you need in one place that is easy to reach
- Finding very simple ways to cook, clean and do other chores.
- Keeping your clothes loose
- Wearing clothes and shoes that are easy to put on and take off
- Asking for help moving things around in your house so that you will not need to climb stairs as often” (National Heart Lung and Blood Institute, 2007)

General Tips:

- Generally, an individual with heart disease should not exceed 3-6 METS or moderate exertion
- Provide intermittent rest breaks during therapy sessions
- Work to strengthen muscle strength and stamina as necessary
- Always utilize proper positioning for exercise
- Monitor blood pressure – pulse and breathing
- Watch for signs of angina. If angina occurs, stop the therapy session and allow the individual to rest. The angina should subside. If it does not, seek medical assistance.
- Utilize ROM exercises to increase maintain strength as needed
- Educate on energy conservation and work simplification principles
- Decrease exercise on days when fluid retention has increased.

Hypertension

Before leaving this section, let us do a quick review of simple hypertension. It is sometimes called the silent killer. Blood pressure in general refers to the measurement of the force the blood is putting on the blood vessel walls. When that number is too high, it
causes the heart to have to pump harder which can lead to other cardiovascular problems such as atherosclerosis or even to heart failure. A normal blood pressure is 120/80. A person is considered hypertensive if their blood pressure reaches 140/90 and above.

Some of the causes of hypertension include:
- Smoking
- Obesity
- Increased salt consumption
- Increased alcohol consumption
- Stress
- Age
- Heredity

As previously stated, many people with hypertension don’t even realize they have it because there are often no symptoms. However, if blood pressure gets very high, some symptoms such as headache, vision problems and/or fatigue may surface. Hypertension is easily diagnosed by a doctor by taking and tracking blood pressure. Treatment is important because untreated hypertension can lead to stroke and cardiac problems as well as other health risks. It can be simply treated with medications as well as changes of habits such as quitting smoking, losing weight, and increasing physical activity. (CDC)

**Therapy Implications for High Blood Pressure**

It may be important to monitor blood pressure during a therapy session. For that reason, the therapist should be familiar with how to take blood pressure measurements. The following is a general guide to taking blood pressure utilizing a sphygmomanometer (blood pressure cuff) and a stethoscope:

- “Sit up or lie down with the arm stretched out. The arm should be level with the heart.
- Put the cuff about 1 inch (2.5 cm) above the elbow. Wrap the cuff snugly around the arm. The blood pressure reading may not be correct if the cuff is too loose.
- Put the earpieces in your ears.
- Using your middle (long) and index (pointer) fingers, gently feel for the pulse in the bend of the elbow. This is the brachial (BRA-kee-ull) artery. You will feel the pulse beating when you find it. Do not use your thumb to feel for the pulse because your thumb has a pulse of its own.
- Put the diaphragm of the stethoscope over the brachial artery pulse. Listen for the heartbeat.
Tighten the screw on the bulb and quickly squeeze and pump the bulb. This will cause the cuff to tighten.

Keep squeezing the bulb until the scale on the gauge reads about 160. Or, until the gauge reads at least 10 points higher than when you last hear the heartbeat.

Slowly loosen the screw to let air escape from the cuff. Let the gauge fall about 5 points a second. Carefully look at the gauge and listen to the sounds. Remember the number on the gauge where you first heard the thumping sound.

Continue to listen and read the gauge at the point where the sound stops.

The number of the first sound is the systolic (top number) pressure.

The second number is the diastolic (bottom number) pressure.

Write down your BP, the date, the time, and which arm was used to take the BP. Let the air out of the cuff.

Do not take a blood pressure on an injured arm or an arm that has an IV or a shunt. A woman who has had a breast removed should have her BP taken on the opposite arm.” (Drugs.com, 2008)

Progressive Neurological Disorders (Alzheimer’s Disease and Parkinson’s Disease)

Alzheimer’s Disease

Alzheimer’s Disease is a progressive degenerative disorder that affects the brain. There are currently about 4 million people in the United States with Alzheimer’s disease. What actually causes AD is not fully known. It was originally identified in 1906 by Dr. Alois Alzheimer, who discovered curious knots and clumps in the brain of a woman who had died following symptoms of a progressive dementia. We now refer to these as plaques and tangles. Plaques refer to proteins outside of the cells and tangles refer to proteins within the cells. All of us develop some plaques and tangles as we age, but those with Alzheimer’s disease have a larger number and this causes a decrease in the cells ability to communicate with one another and a decrease in the neurotransmitters that enable cells to communicate. This inability to communicate causes the neurons to die. So literally, in Alzheimer’s disease, the brain is slowly and progressively dying. The symptoms of AD are as follows:

- Increasing forgetfulness
- Difficulties with abstract thinking
- Difficulty finding the right word
- Disorientation
- Loss of judgment
- Difficulty performing familiar tasks
- Personality changes
The symptoms may go undetected for a few years because individuals may hide them well. Once a person is diagnosed, the individual can live with AD for as little as 3 years or as long 10 years or even longer. (MFMER, January 2007)

There are only a few definite risk factors for developing Alzheimer’s disease. The first and greatest is age. AD usually develops after age 65. As a person continues to age the risk continues to increase, doubling every 5 years after 65. AD can affect people under 65 but it is rare. When it is seen in younger individuals, even as young as 30-50 years old, it is referred to as early onset Alzheimer’s disease. Heredity is the second risk factor. If a person has a first degree relative with the illness (mother, father, sister, brother), their risk for developing the disease increases. Certain genes have been identified with an increased risk for developing AD. A gene identified as APOE has been shown to carry a risk for late onset AD while 3 other genes have been identified as carrying a risk for early onset AD. Age and heredity are the only 2 known risk factors. Many studies have shown links to other possible risk factors. For example, some studies have shown that certain lifestyles may be associated with a risk for developing AD. Lifestyles such as excessive alcohol, smoking, and a sedentary lifestyle are among other risks factors being studied. (NCCDP, 2008)

It is helpful to understand how the disease progresses, and this is commonly done by identifying stages and common characteristics of each stage. Sometimes, AD is defined by 3 stages, early – middle – and late. (Alzheimer’s Association, 2008) Other times, AD is defined by 7 stages which are summarized by the Alzheimer's Association as follows:

Stage 1: **No impairment (normal function)**
Unimpaired individuals experience no memory problems and none are evident to a health care professional during a medical interview.

Stage 2: **Very mild cognitive decline (may be normal age-related changes or earliest signs of Alzheimer's disease)**
Individuals may feel as if they have memory lapses, especially in forgetting familiar words or names or the location of keys, eyeglasses or other everyday objects. But these problems are not evident during a medical examination or apparent to friends, family or co-workers.

Stage 3: **Mild cognitive decline**
Early-stage Alzheimer's can be diagnosed in some, but not all, individuals with these symptoms
Friends, family or co-workers begin to notice deficiencies. Problems with memory or concentration may be measurable in clinical testing or discernible during a detailed medical interview. Common difficulties include:

- Word- or name-finding problems noticeable to family or close associates
- Decreased ability to remember names when introduced to new people
- Performance issues in social or work settings noticeable to family, friends or co-workers
- Reading a passage and retaining little material
• Losing or misplacing a valuable object
• Decline in ability to plan or organize

Stage 4: Moderate cognitive decline  
(Mild or early-stage Alzheimer's disease)  
At this stage, a careful medical interview detects clear-cut deficiencies in the following areas:

• Decreased knowledge of recent occasions or current events
• Impaired ability to perform challenging mental arithmetic—for example, to count backward from 75 by 7s
• Decreased capacity to perform complex tasks, such as planning dinner for guests, paying bills and managing finances
• Reduced memory of personal history
• The affected individual may seem subdued and withdrawn, especially in socially or mentally challenging situations

Stage 5: Moderately severe cognitive decline  
(Moderate or mid-stage Alzheimer's disease)  
Major gaps in memory and deficits in cognitive function emerge. Some assistance with day-to-day activities becomes essential. At this stage, individuals may:

• Be unable during a medical interview to recall such important details as their current address, their telephone number or the name of the college or high school from which they graduated
• Become confused about where they are or about the date, day of the week or season
• Have trouble with less challenging mental arithmetic; for example, counting backward from 40 by 4s or from 20 by 2s
• Need help choosing proper clothing for the season or the occasion
• Usually retain substantial knowledge about themselves and know their own name and the names of their spouse or children
• Usually require no assistance with eating or using the toilet

Stage 6: Severe cognitive decline  
(Moderately severe or mid-stage Alzheimer's disease)  
Memory difficulties continue to worsen, significant personality changes may emerge and affected individuals need extensive help with customary daily activities. At this stage, individuals may:

• Lose most awareness of recent experiences and events as well as of their surroundings
• Recollect their personal history imperfectly, although they generally recall their own name
• Occasionally forget the name of their spouse or primary caregiver but
generally can distinguish familiar from unfamiliar faces
- Need help getting dressed properly; without supervision, may make such errors as putting pajamas over daytime clothes or shoes on wrong feet
- Experience disruption of their normal sleep/waking cycle
- Need help with handling details of toileting (flushing toilet, wiping and disposing of tissue properly)
- Have increasing episodes of urinary or fecal incontinence
- Experience significant personality changes and behavioral symptoms, including suspiciousness and delusions (for example, believing that their caregiver is an impostor); hallucinations (seeing or hearing things that are not really there); or compulsive, repetitive behaviors such as hand-wrangling or tissue shredding
- Tend to wander and become lost

Stage 7: Very severe cognitive decline
(Severe or late-stage Alzheimer's disease)
This is the final stage of the disease when individuals lose the ability to respond to their environment, the ability to speak and, ultimately, the ability to control movement.

- Frequently individuals lose their capacity for recognizable speech, although words or phrases may occasionally be uttered
- Individuals need help with eating and toileting and there is general incontinence of urine
- Individuals lose the ability to walk without assistance, then the ability to sit without support, the ability to smile, and the ability to hold their head up. Reflexes become abnormal and muscles grow rigid. Swallowing is impaired.

Alzheimer’s Assoc. (http://www.alz.org/alzheimers_disease_stages_of_alzheimers.asp)

To diagnose AD, physicians must do a comprehensive battery of tests to rule out other illnesses that may cause dementia. There are a variety of illnesses that can cause dementia symptoms that would not be classified as Alzheimer’s disease. It would be important for the physician to be able to identify any illnesses that could be treated. For example, illnesses such as depression and some metabolic disorders can cause a type of dementia that that can be effectively treated. For this reason the physician must carefully perform a variety of tests such as:

- Medical history
- Blood tests
- Mental status evaluation
- Neurological testing
- Psychiatric testing
- Brain Scans
- Genetic testing
With these tests and important input from the family, a physician can diagnose Alzheimer’s disease with approximately 90% accuracy. AD can only be 100% confirmed with an autopsy of the brain after death. Currently, there is no cure for Alzheimer’s disease but there are some effective treatment techniques. Drug treatment is the most common type of intervention utilized. The drugs work to slow the progression of the disease by having an effect on the neurotransmitters in the brain. Some drugs are more effective in early stages but one drug, Namenda, has been shown to help in the middle and even late stages of the illness. (MFMER, January 2007)

Alzheimer’s disease accounts for approximately two thirds of the cases of dementia in the United States, but it is important to note that the other one third of related dementias are cause by illnesses such as:

- Vascular disease
- Parkinson’s disease
- Huntington’s disease
- Lewy Body dementia
- Fronto-temporal dementia
- Wernicke-Korsakoff dementia

Each of these also presents many times as a medical complexity in the clients we serve. (Alzheimer’s Association, 2008)

**Therapy Implications for Management of Alzheimer’s Disease and Related Dementias**

There are several important considerations for the therapist to be aware of when treating an individual with a complexity of dementia. First, it may be important for the therapist to understand what stage of dementia the individual is experiencing. When we understand the stage of dementia, we will better understand what level of function we can expect the individual to achieve. There are several staging tools for dementia including:

- Allen Cognitive Battery including the Allen Cognitive Level Screen ACLS, Routine Task Inventory RTI, Allen Diagnostic Module ADM and the Cognitive Performance Test (Allen Cognitive Network, 2008)
- Global Deterioration Scale GDS (Reisberg, 1982)
- Functional Assessment Staging Tool FAST (Reisberg, 1988)

In cases where cognitive decline is occurring, the therapist must look at the unique cognitive needs of that client and evaluate the impact that these deficits have on the ability to perform mobility tasks, ADL tasks and communication tasks. Strategies may then need to be incorporated into your treatment plan such as modified cueing, sensory modulation, environmental adaptation, adapted task structure, or other strategies to assist in maintaining participation in functional skills you are addressing during therapy sessions. Examples might include a resident with cognitive decline who can still participate in transfers with modified cueing and transfer strategies. The therapist might train to complete stand-pivot transfers on the count of three using “echo” counting and tactile cues before standing. Another example might be a resident with cognitive
impairment who has difficulty scooping food, is distracted while eating and is a choking risk. This resident may still be able to participate in the feeding task by turning off music in the dining room, removing extra utensils from her tray, using adapted spoon and plate and then cueing for proper swallowing strategies. Simple descriptions of some strategies utilized with the cognitively impaired are as follows:

**Environmental analysis and adaptation**
- Decreasing distractions in the environment
  Analyzing - Looking at the various stimuli in an environment, all the things that are competing for their attention visually, auditory, even smells at times. In addition, looking at the frequency and intensity of the various stimuli and whether it is predictable or not. That could mean removing items that they don’t use from their sink top, or decreasing the number of overhead pages, or turning off the TV during self care.
- Increasing the number of clues in the environment
  Adapting - Examples would include putting objects in plain view (or even within 14 to 18 inches from eye level), putting striking visual cues in the environment such as labeling drawers, putting a sign up that reads to use the call light when needing help, putting yellow tape on the areas where hands are placed on a walker, marking things that may be safety hazards (putting red tape on the hot water knob for ex) writing out a shower or grooming schedule, hanging appropriate clothing together on the same hanger, or using a written schedule for daily living tasks (including leisure pursuits)

**Task analysis then design of task gradation, simplification and structuring**
- This would include taking an activity and breaking it down into parts that the resident can accomplish. For some residents that might mean one step directions at a time, others can complete a larger part of the task at one time. Or it may mean changing the task to make it simpler – Deciding if the task / skill can be done a different way that would make the resident more successful. Or it could mean structuring the task, for example, to do the task at a certain time every day or to define tasks/activities that are cognitively appropriate to the resident.

**Identify Modified Cueing Strategies** (Providing the appropriate level of assistance in cueing)
- Does the individual needs cues to participate in the task / skill? What are the most appropriate cues for the individual - verbal, visual, tactile? Do they need to be given in combination? Do they need to be given constantly, consistently, intermittently? What are the communication techniques that work for the particular resident such as, speaking in short phrases, waiting 10-15 seconds for a response, or asking the resident if they need assistance instead of assuming they don’t require assistance if you don’t hear from them?

**Determine sensory processing patterns and implement modulation strategies**
- Oftentimes these strategies can be used to effect a reduction in behaviors that are interfering with function and safety. Examples might include:
  - Sit in a rocking chair or glider
  - Listen to music
  - Chew gum
Provide fidgets/hold a weighted item
Structured walking

All therapists working with individuals with cognitive decline need to be well educated on good communication techniques with the confused individual including the validation technique. Simply put, to use validation is, first, to recognize the feelings of the person and not deny them. Secondly, you must use empathy to try to understand these feelings which builds trust and thirdly, you must help the individual to express these feelings which helps to restore dignity. (Feil, 1992) This is the basis for good communication with the individual with dementia.

Parkinson’s Disease

Parkinson’s disease is the second most common neurodegenerative disease, second only to Alzheimer’s disease. Parkinson’s disease is usually diagnosed after the age of 65 although about 15% of those with the illness are diagnosed under the age of 50. It is caused by a decrease in the neurotransmitter dopamine in the brain. This decrease in dopamine causes the symptoms that are commonly associated with Parkinson’s. The most common symptoms are:

- Tremor and in-coordination
- Slowness of movement
- Stiffness
- Poor balance

Other symptoms include:

- Flat facial expression
- Shuffling gait
- Slurred speech  (National Parkinson Foundation, 2007)

The tremor that is associated with Parkinson’s, usually begins on one side of the body. That is most often seen initially in the hand and causes what is referred to as a “pill rolling” movement. The slowness of movement, referred to as bradykinsesia, is the result of a decreased ability to initiate movement. This can even lead to a person “freezing” in their walking or in any other movement they try to initiate. Balance may become a problem in the later stages of the illness. There is also a type of dementia that can occur with this illness.

Although medical researchers are not sure what causes the decrease in dopamine, there are some risk factors that have been identified. The first risk factor is age. As a person gets older, the chances for developing Parkinson’s increases. Heredity also plays a factor although the increase in risk is still less than 5%. Men are also more likely to get the
illness than women. In addition, there may be some environmental factors that can add to a person’s risk but those are still being studied.

Diagnosis of Parkinson’s can be difficult as there are no specific tests that give a definitive diagnosis. The diagnosis is usually made after a thorough medical exam, including a complete neurological exam by the doctor. A person may be initially alerted by a slight tremor in one hand or a flat affect on the face (little expression). In addition, the person’s may begin to speak in a softer voice, almost a mumble. These would be important details to mention to the doctor to assist him/her in making a diagnosis. At times, the symptoms of other illnesses may be mistaken for Parkinson’s disease. For example, Lewey Body Dementia has some similar symptoms such as stooped posture and shuffling gait that can be mistaken for Parkinson’s disease. Some of the hallmark signs that differentiate Parkinson’s from other illnesses include symptoms beginning on one side of the body and a tremor that is still seen at rest.

Treatment is aimed at managing the symptoms of the illness. Drugs, such as Levodopa, can have a dramatic effect as it converts into dopamine in the brain and decreases many of the symptoms. It can, unfortunately, begin to have a less dramatic effect the longer an individual utilizes it. Other drugs are also used that mimic the effect of dopamine in the body. They seem to be less effective but can be used in conjunction with Levodopa and help to stabilize the individual. Other classes of drugs that are also utilized include MAO B inhibitors, COMT inhibitors, Anti-cholinergics, and Anti-virals. In some cases, brain surgery is recommended. A procedure is utilized called deep brain stimulation and it can help to decrease the involuntary movements. (MFMER, May 2008)

**Therapy Implications for Management of Parkinson’s Disease**

Common implications for therapists that are treating an individual with a complexity of Parkinson’s Disease include issues with balance, in-coordination and fatigue which increases the risk of falling. In fact, Parkinson’s is sometimes referred to as the “falling sickness”. Therefore any intervention with an individual with Parkinson’s should include a good strategy to reduce this risk. Utilizing the Timed Up and Go Test for Fall Risk Assessment may be helpful to determine the risk the individual may have. Following is a description of the TUG:

Timed Up and Go (TUG) Test
1. Equipment: arm chair, tape measure, tape, stop watch.
2. Begin the test with the subject sitting correctly in a chair with arms, the subject’s back should resting on the back of the chair. The chair should be stable and positioned such that it will not move when the subject moves from sitting to standing.
3. Place a piece of tape or other marker on the floor 3 meters away from the chair so that it is easily seen by the subject.
4. Instructions : “On the word *GO* you will stand up, walk to the line on the floor, turn around and walk back to the chair and sit down. Walk at your regular pace.
5. Start timing on the word “*GO*” and stop timing when the subject is seated again.
correctly in the chair with their back resting on the back of the chair.

6. The subject wears their regular footwear, may use any gait aid that they normally use during ambulation, but may not be assisted by another person. There is no time limit. They may stop and rest (but not sit down) if they need to.

7. Normal healthy elderly usually complete the task in ten seconds or less. Very frail or weak elderly with poor mobility may take 2 minutes or more.

8. The subject should be given a practice trial that is not timed before testing.

9. Results correlate with gait speed, balance, functional level, the ability to go out, and can follow change over time.

10. Scores greater than 8.5 seconds have been shown to be associated with an increased risk for falls. (Podsiadlo, 1988)

The major components to a fall prevention program for Parkinson’s includes balance training, resistance training, transfer / gait training, environmental modifications and education on energy conservation. A focus in these areas has shown to reduce falls by at least 30%. An exercise program to be completed daily by the individual that includes strengthening, ROM and flexibility is imperative. Balance exercises including pulling and weight shifting have been shown to reduce the risk of falls as well. (Hirsch, 1998) Scales for balance may also be useful during assessment. Common scales that are used include The Tinetti Assessment Tool and the Berg Balance Scale. The Physician and Sports Medicine Journal recommend some of the following specific exercises to assist common deficits faced by the individual with Parkinson’s.

<table>
<thead>
<tr>
<th>To assist with: Initiation of movements</th>
<th>Utilize: Cueing strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>To assist with: Walking to rapidly</td>
<td>Utilize: Cueing strategies</td>
</tr>
<tr>
<td></td>
<td>Gait exercises (forward, backward, sideways)</td>
</tr>
<tr>
<td></td>
<td>Practice position changes</td>
</tr>
<tr>
<td>To assist with: Stopping</td>
<td>Utilize: Practicing alternate gaits (forward, backward, walking on heels and toes)</td>
</tr>
<tr>
<td>To assist with: Muscle rigidity</td>
<td>Utilize: Stretching exercises</td>
</tr>
<tr>
<td>To assist with: Trunk stiffness</td>
<td>Utilize: Rotational and straightening up exercises</td>
</tr>
<tr>
<td>To assist with: Compound movements</td>
<td>Utilize: Training with motor sequences</td>
</tr>
<tr>
<td>To assist with: Balance</td>
<td>Utilize: Roll exercises, reach exercises, physiotherapy ball exercises</td>
</tr>
<tr>
<td>To assist with: Strength</td>
<td>Utilize: Isometric exercises (in supine, prone, and quadruped positions), Rollover exercises (Reuter, 2002)</td>
</tr>
</tbody>
</table>

You can find a good pictorial of exercises for the individual with Parkinson’s Disease at the following site (http://www.parkinson-italia.info/e_gym_uk/index.php)

Common environmental modifications for this population include:
Removing clutter
Securing rugs and electrical cords
Improving illumination
Installing handrails, grab bars, and nonskid strips

Diabetes – (Type 1 and Type 2)

The incidence of diabetes is on the rise at a striking rate. In 2007, it was estimated that approximately 18 million people had been diagnosed with diabetes. That was double the number of diagnosed cases only 15 years earlier. It is estimated that 5.7 million people are living with the disease undiagnosed. Diabetes refers to an illness where an individual has insufficient insulin or an inability of the body to utilize insulin. Insulin is important to the body because it aids in the transportation of sugar to cells which the body then uses for energy. There are 2 types of diabetes. Type 1, also sometimes referred to as Juvenile Onset Diabetes, accounts for 5-10% of the cases of diabetes. Type 2 diabetes, which typically occurs after age 40, accounts for 90-95% of the cases. Increasingly, people under the age of 40 are being diagnosed with Type 2 diabetes and this is largely due to the increased incidence of obesity. The incidence of diabetes, also however, does increase with age with approximately 20% of individuals over 60 having diabetes. There are also racial and ethnic differences, with African Americans, Hispanics and Native Americans having twice the risk as whites to develop diabetes. (CDC, September 2008) Now more about the 2 types of diabetes:

Type 1 diabetes is caused by an autoimmune disorder which destroys insulin producing cells therefore inhibiting the production of insulin. As stated previously, the body cannot transport sugar without insulin so the sugar builds up in the body. This build-up of sugar can cause damage to many parts of the body. The symptoms of Type 1 diabetes are:

- Increased thirst
- Increased urination
- Weight loss
- Fatigue
- Blurred vision

Type 2 diabetes, which is also known as non-insulin dependent diabetes (NIDDM) is a disease wherein your body is either resistant to the action of insulin or it does not produce enough insulin. Its symptoms are similar to those above and also include slow healing sores and frequent infections. Increased weight and inactivity are the 2 most prevalent risk factors for type 2 diabetes.
The physician uses a few simple tests to diagnose either type of diabetes. The first is a random blood sugar test and the second is a fasting blood sugar test. Once diagnosed, the individual needs to begin treatment. Treatment may include taking insulin and always involves checking one’s blood sugar regularly. Other important aspects of treatment include controlling diet and increasing physical activity. According to the Mayo Clinic, some important habits to develop to further manage the illness include:

- Learn all about the illness and how to manage it
- Make sure people know you have diabetes (possibly by wearing an ID bracelet)
- Have regular physical and eye exams
- Get an annual flu shot
- Inspect your feet regularly
- Keep blood pressure and cholesterol under control
- Quit smoking
- Limit alcohol intake

The person with diabetes is at risk for several complications. Some of those are short term such as high or low blood sugar but others are long term and more severe. Some of the risks include damage to the heart and blood vessels. In fact, statistics show that 75% of people with diabetes die from some type of heart disease. In addition, nerve damage is common which can cause tingling, numbness and/or pain in the limbs. Also, kidney damage is common which can lead to complete kidney failure. More recently, an increased risk for developing Alzheimer’s Disease has been associated with type 2 diabetes. Other long term complications include eye damage, foot damage, skin and mouth conditions and osteoporosis. (MFMER, October 2007)

**Therapy Implications for Management of Diabetes**

Hypoglycemia is a daily risk for individuals with diabetes. It can occur suddenly and without warning. Therefore, the therapist must be able to recognize hypoglycemia and be able to assist the individual as necessary. Some of the symptoms that would indicate hypoglycemia would include sweating, confusion or slowed thinking processes. In addition slowed motor processes (including slurred speech) and in-coordination may occur and can even lead to unconsciousness if left untreated. If a client that you are treating begins to exhibit some of these symptoms, the therapist would need to discontinue the therapy and test their glucose and treat the hypoglycemia if indicated. If unable to test blood glucose levels, it is best to treat the individual to be safe. Treatment includes eating a small amount of carbohydrates (small glass of regular soft drink or juice, 1 tablespoon honey, large glass of milk), then retest the blood glucose level after 15 minutes. This process needs to be repeated until the blood glucose level becomes normal. Because hypoglycemia can be induced by vigorous exercise, the therapist should schedule therapy sessions involving strenuous activity 1-3 hours following a meal to decrease the risk.

According to the American Occupational Therapy Association, to “avoid client injury from peripheral neuropathy, practitioners should incorporate the following general precautions and considerations into therapy interventions.”
“Engage in proper foot care, including thoroughly washing and drying of feet, wearing appropriate footwear, and inspecting the feet every day. 
- Use an ankle or foot brace, molded insoles, custom-made or extra-depth shoes as prescribed by the physician.
- Limit weight bearing and repetitive exercise on the feet.
- Reduce hazards by immediately and properly disposing of sharp objects, including syringe needles and blood glucose testing lancets.” (Sokol-McKay, 2002)

Other Tips:
- Avoid using heat modalities such as physical agent modalities, heating pads and hot water bottles
- Encourage individual to wear socks and shoes
- Encourage individual to avoid crossing legs (Sokol-McKay, 2002)

**Persistent Mental Health Disorders – Depression and Anxiety**

Mental health in general is known to effect the management and outcomes of several chronic health disorders. Two common mental health disorders seen in our clients that tend to have a definite effect on therapy outcomes are depression and anxiety.

**Depression**

Depression is sometimes referred to as the “common cold” of mental health. In the United States it is the most diagnosed mental health disorder. It is a widespread and common disorder whose symptoms may vary from mild to severe. It leads 15% of those untreated with it to the extreme of suicide. Unlike some of the common misconceptions, it is not just a sad mood that someone can “shake off” but actually involves brain chemistry that affects all aspects of one’s functioning, both a person’s physical functioning as well as their psychosocial functioning. So what causes depression? It’s roots are varied and usually from more than one single cause. Generally, some of those causes include:
- Genetics and Biology
- Traumatic experiences
- Environmental and sociological factors
- Medication side effects
- Spiritual crisis

The website “Healing from Depression” lists the following symptoms as the most common:
- * chronically sad or empty mood.
- * loss of interest or pleasure in ordinary
pleasurable activities, including sex.
* decreased energy, fatigue, feeling slowed down, slowed movement, slurred speech.
* sleep disturbances (insomnia, early morning waking, or oversleeping).
* eating disturbances (loss of appetite, significant weight loss or weight gain).
* difficulty concentrating, impaired memory, difficulty in making decisions.
* agitated actions (pacing, hand-wringing, etc.)
* feelings of guilt, worthlessness or helplessness.
* feelings of hopelessness and despair.
* thoughts and/or talk of death and suicide.
* irritability or excessive crying.
* social withdrawal or isolation.
* chronic aches and pains that don't respond to treatment.
* suicide attempts.
* increase in addictive behavior.”

These, of course, are not necessarily indicative of depression if taken in isolation. It is usually a cumulative effect of several of the above symptoms, how long the symptoms last and how intense the symptoms manifest themselves. (Healing from Depression, 2008)

Treatment is extremely important for individuals with depression. Unfortunately many people go untreated. Sometimes individuals are diagnosed with a physical illness when the cause is actually depression. Many people just never seek medical assistance for their depression. With proper treatment, improvement is seen in 80% of the cases. The 2 most common forms of treatment are medication and psychotherapy. Medication can assist with symptoms such as elevating mood, but also can be used to assist with symptoms such as sleep and appetite issues. In most cases, an anti-depressant medication takes 1 to 3 weeks to begin to take effect. Some people will only need medication for a short period of time while others may need to take it throughout their life. Some common anti-depressant medications are Effexor, Elavil, Remeron, Paxil and Wellbutrin. Psychotherapy can be used in conjunction with medication or alone. Psychotherapy can be used to change ideas, increase self esteem, assist in developing coping strategies and problem solving abilities as well as just providing support to the individual. The length of time a person may need psychotherapy is dependent on the individual.

Anxiety

According to the National Institute of Mental Health, anxiety disorders affect about 40 million Americans. Everyone has experienced anxiety at one time or another, so most of us know the feeling of being fearful and/or uncertain. Someone who has an anxiety disorder can have these feelings at random times and for long periods of time, even as long as 6 months. Although there are various types of anxiety
disorders including social phobias and obsessive compulsive disorder, for our purposes we will discuss a generalized anxiety disorder. An individual with generalized anxiety disorder begins many days with a sense of worry and stress. This is sometimes manifested by a racing or pounding heart. They often have a sense that something is going to go wrong at any moment, whether that be in areas of family, health or work. They have difficulty letting go of the tension that this produces and often have trouble concentrating, sleeping or relaxing. Other symptoms can include irritability and feeling like your mind is going blank. Anxiety can range from mild to severe and can interfere with carrying out daily functions. Generalized anxiety disorder is more common in women than in men. (NIMH, April 2008) HelpGuide.org lists the following questions that can help to determine if someone has an anxiety disorder:

- “Are you constantly tense, worried, or on edge?
- Does your anxiety interfere with your work, school, or family responsibilities?
- Are you plagued by fears that you know are irrational, but can’t shake?
- Do you believe that something bad will happen if certain things aren’t done a certain way?
- Do you avoid everyday situations or activities because they make you anxious?
- Do you experience sudden, unexpected attacks of heart-pounding panic?
- Do you feel like danger and catastrophe are around every corner? “ (Smith, 2008)

Treatment for anxiety disorders includes medications and psychotherapy. Medications utilized are anti-anxiety, anti-depressants and beta blockers. Common anti-depressants are noted in the section on depression. Common anti-anxiety medications are Klonopin, Xanax, and Buspar. Beta blockers, a group of heart medications, are often used to treat the physical manifestations of anxiety. It can take 2 to 6 weeks before the effects of the medications are seen depending on the medication. Psychotherapy can help the person to understand what may be underneath the anxiety. Cognitive – Behavioral Therapy is commonly used to treat anxiety disorders as it helps the person change patterns of thinking as well as how to react to certain patterns of thinking. As with depression, medications and psychotherapy can be used alone or in conjunction with one another. (NIMH, April 2008) Many times anxiety and depression go hand in hand. In other words, people who suffer from anxiety often also suffer from depression. There is some research that shows a biological link between these two disorders. (Smith, 2008)

**Therapy Implications for Management of Depression and Anxiety:**

Depression and anxiety often co-exist with physical disorders so it is not unusual at all that the therapist may be dealing with individuals who have either or both of these conditions. It is important to note that the individual with either depression or anxiety might have limited energy and low motivation to participate. For this reason, it is important to incorporate some of the following into your treatment sessions:

- Start with small goals – starting with larger goals can be overwhelming and cause the person to not even try. You can work up to larger goals as confidence and self esteem increase.
Encourage physical activity – The person with depression needs to keep active. We all know the benefits that physical activity can have on our moods and behaviors. For the person with anxiety, exercise can be a way to discharge some of the anxious energy.

Provide a structured routine – This can help the person cope. Have a regular time that your therapy sessions are scheduled so that the individual can be ready / prepared and not caught off guard (both physically and emotionally). Having the schedule posted in the room may be helpful. You will still most likely need to encourage them to stick to the schedule.

Build their self confidence – Give praise and encouragement without “overdoing it”.

Help them recognize negative thought patterns – The person may express feelings of not being adequate or being unable to accomplish things. Help them recognize that this is counter productive. Help them to focus on positive thoughts.

Individuals may have a pattern of “learned helplessness” and resist trying to increase independence. Again, start with small gains and work towards larger ones as confidence increases.

Learn about the disease process – It is important to know some of the signs and symptoms of depression and anxiety so that you can assist in recognizing individuals who may have these disorders that may be going untreated.

A very practical suggestion is to have gum or hard candy to help with relieving dry mouth (med side effect). This in itself can help to make your therapy session more “fruitful”.

Individuals who are dealing with depression and anxiety may have difficulty concentrating or remembering your instructions. Be careful to repeat as necessary without becoming frustrated or shaming the individual.

Individuals who are experiencing anxiety may need to practice breathing and relaxation techniques. The breathing techniques listed under therapy implications for COPD (Pursed lip breathing and Diaphragmatic breathing) can be utilized. Other simple techniques include deep breathing and progressive muscle relaxation. Deep breathing (a form of diaphragmatic breathing) is simply asking the person breathe slowly and deeply. It helps to have them place their hand on their stomach to make sure that this is the part that is moving and not the upper chest. Progressive muscle relaxation is the process of tensing a muscle and holding it for a few seconds, then releasing that tension. This helps to produce a sense of relaxation. It can be done on one muscle group or on a series of muscles. (Healthy Place, 2008)

Chronic Kidney Disease

The kidneys are designed to remove by products as well as water from the body. In addition the kidneys help to regulate calcium, sodium and potassium in the body. It is estimated that 1 in 6 people have chronic kidney disease. Individuals over 60 have an increased incidence. Chronic kidney disease occurs when gradual loss of kidney function is experienced over time. It ranges from slight kidney damage to total or near total kidney or “renal” failure. The 2 major culprits in causing chronic kidney failure are
diabetes and high blood pressure. Other causes include Lupus, kidney disease, over use of acetaminophen or ibuprofen, atherosclerosis, or enlarged prostate. (WebMD, Inc. - Chronic Kidney Disease, 2008)

Some of the symptoms of chronic kidney disease described by Life Options are:

“Symptom 1: Changes in Urination

- You may have to get up at night to urinate.
- Urine may be foamy or bubbly. You may urinate more often, or in greater amounts than usual, with pale urine.
- You may urinate less often, or in smaller amounts than usual with dark colored urine.
- Your urine may contain blood.
- You may feel pressure or have difficulty urinating.

Symptom 2: Swelling

Failing kidneys don't remove extra fluid, which builds up in your body causing swelling in the legs, ankles, feet, face, and/or hands.

Symptom 3: Fatigue

Healthy kidneys make a hormone called erythropoietin (a-rith'-ro-po'-uh-tin) that tells your body to make oxygen-carrying red blood cells. As the kidneys fail, they make less erythropoietin. With fewer red blood cells to carry oxygen, your muscles and brain become tired very quickly. This condition is called anemia, and it can be treated.

Symptom 4: Skin Rash/Itching

Kidneys remove wastes from the bloodstream. When the kidneys fail, the buildup of wastes in your blood can cause severe itching.

Symptom 5: Metallic Taste in Mouth/Ammonia Breath

A buildup of wastes in the blood (called uremia) can make food taste different and cause bad breath. You may also notice that you stop liking to eat meat, or that you are losing weight because you just don't feel like eating.

Symptom 6: Nausea and Vomiting

A severe buildup of wastes in the blood (uremia) can also cause nausea and vomiting. Loss of appetite can lead to weight loss.

Symptom 7: Shortness of Breath
Trouble catching your breath can be related to the kidneys in two ways. First, extra fluid in the body can build up in the lungs. And second, anemia (a shortage of oxygen-carrying red blood cells) can leave your body oxygen-starved and short of breath.

**Symptom 8: Feeling Cold**

Anemia can make you feel cold all the time, even in a warm room.

**Symptom 9: Dizziness and Trouble Concentrating**

Anemia related to kidney failure means that your brain is not getting enough oxygen. This can lead to memory problems, trouble with concentration, and dizziness.

**Symptom 10: Leg/Flank Pain**

Some people with kidney problems may have pain in the back or side related to the affected kidney. Polycystic kidney disease, which causes large, fluid-filled cysts on the kidneys and sometimes the liver, can cause pain. “ (Life Options, 2008)

Physicians use simple tests to help determine if the kidney is diseased. Blood tests, urine tests as well as x-rays are utilized. Treatment for chronic kidney disease includes following certain dietary guidelines. There are certain restrictions such as proteins, salt, fluid intake, potassium and phosphorus are all limited. Blood pressure and cholesterol must be controlled and use of certain over the counter drugs (analgesics, laxatives, decongestants, alka seltzer) must be limited as well. As the illness progresses, dialysis may become necessary. There are 2 types of dialysis – hemodialysis and peritoneal dialysis. In hemodialysis, the blood is circulated through a machine that cleans the blood of by products and water as well as normalizing other minerals. Typically, hemodialysis takes 3-5 hours and occurs 3 times a week. In peritoneal dialysis, dialysis fluid is put into the abdomen and remains there for a few hours. This allows for this special fluid to draw excess water and waste from tissues. This must be repeated a various intervals throughout the day. The benefit is that this can be performed at home and you can continue with your normal routine. A final alternate treatment for chronic kidney disease is transplantation. This is usually a last treatment option. (WebMD, Inc. - Chronic Kidney Disease, 2008)

**Therapy Implications for Management of Chronic Kidney Disease**

**General Tips**

- The individual with chronic kidney disease often will be fatigued. If they are on dialysis, the fatigue is even more pronounced. Oftentimes, they will fear doing exercise because it will “only tire them out more”. In actuality, the exercise will help them feel less tired!
- Let the person know that movement and exercise will help with many of the complications of renal disease. Not only can it help to increase energy level as
previously mentioned, it can help increase appetite, improve sleep, reduce cholesterol level and improve digestion.

- You may want to start with stretching exercises, especially if the individual is extremely fatigued. Most people can at least stretch and it is a way to increase blood flow throughout the body. In addition, it may help with cramping that can occur with the renal patient.

- Bone changes that occur with renal failure can weaken bones and cause fractures. Weight-bearing exercise can assist with strengthening of bones. Watch for complaints of pain as this may indicate small fractures and should be referred to nursing. (Frasier, 2006)

- Encourage the person to exercise / perform functional skills at their own pace. That may involve, once again, teaching the importance of energy conservation and work simplification. Below is another listing of these principles that may be helpful as you treat the renal client:
  - Use a pattern of activity/rest/activity/rest
  - Break the activity into parts
  - Pace yourself
  - Don’t rush
  - Set your priorities
  - Plan your time and energy
  - Be aware of your body positioning
  - Avoid lifting and carrying
  - Sit to work whenever possible
  - Organize your working space
  - Use equipment that will save energy
  - Be aware of breathing

- Be aware that the renal patient may suffer from a variety of symptoms that could occur during your treatment session. They may feel cold and require a sweater or blanket. They may complain of dizziness and need close monitoring in standing activities. They may complain of shortness of breath and require frequent rest breaks or monitoring with Dyspnea scales. They may experience nausea during a treatment session and need to rest and relax. (Frasier 2006)

**Obesity**

About one third of all adults in the United States are obese. According to the Centers for Disease Control, persons with a Body Mass Index (BMI) of over 30 are considered obese. Also according to the CDC, having a BMI of over 30 places the individual at a risk for developing some major illnesses including the following:

- Coronary heart disease
- Type 2 diabetes
- Cancers (endometrial, breast, and colon)
- Hypertension (high blood pressure)
Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
Stroke
Liver and Gallbladder disease
Sleep apnea and respiratory problems
Osteoarthritis (a degeneration of cartilage and its underlying bone within a joint)  
(CDC, May 2008)

Other factors related to obesity that are utilized to determine these and other health risks are a person’s waist circumference and the extent of physical inactivity. What are the factors that contribute to obesity?

This can be difficult to determine but physicians know that behavior, environment and genetics all play a role. Behavior plays a role as an individual needs to balance the number of calories consumed with the number of calories utilized during normal body functions and physical activity. Environment plays a role in a more subtle form. For example, a person’s cultural background may affect the types of foods consumed, or a person’s neighborhood (without sidewalks) or job (sedentary) may limit their physical activity. Finally, genetics plays a role as some genes have been isolated that relate to known illnesses that cause weight gain. That being stated, obesity is often blamed on genetics when a behavioral or physical link is more likely. (CDC, May 2008)

Treatment for obesity mainly involves correcting the imbalance between the number of calories consumed and the number of calories expended. Many people are unaware of the number of calories contained in, for example, a regular fast food meal. The Surgeon General’s office gives the following as an example – A typical fast food meal of a double patty cheeseburger, extra large fries and a large soft drink is approximately 1500 calories. After consuming that amount of calories an individual would need run for 2 ½ hours at a fairly fast pace to utilize that same amount of calories. The Surgeon General recommends the following plan for individuals who suffer from obesity:

- “Physical activity should be initiated slowly, and the intensity should be increased gradually (e.g., start with a 10-minute walk three times a week and work your way up to 30 minutes of brisk walking or other form of moderate activity five times a week).
- Activities can be split into several short periods (e.g., 10 minutes 3 times a day) instead of one longer period (e.g., 30 minutes once a day).
You should select activities that you **ENJOY** and can fit into your daily life.

It may take time to incorporate more activity into your daily life. Don't get discouraged if at first you miss a day or two; just keep trying and do your best to make it a regular part of your life. You will soon realize how good it feels to be physically active and fit.

Ask for support from friends and family; likewise, support the people in your life who are trying to be physically active.

Many forms of physical activity can be social, allowing you to converse and spend time with family or friends or to develop new relationships.

Make fitness a priority… **COMMIT TO IT.**” (Surgeon General, January 2007)

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### Therapy Implications for Management of Obesity

Therapists who treat individuals with a medical complexity of obesity must first follow some very basic guidelines:

1) The therapist should educate himself or herself on the basics of measuring BMI or Body Mass Index. BMI is a well known index for obesity and is calculated by taking weight (lbs) and divide it by height (in). Take the result of that calculation and divide it by height again. Then, multiply that number by 703. Round to the second decimal place. The classification scale is as follows:  

<table>
<thead>
<tr>
<th>Below 18.5</th>
<th>Underweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.5 - 24.9</td>
<td>Normal</td>
</tr>
<tr>
<td>25 - 29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>30 &amp; Above</td>
<td>Obese</td>
</tr>
</tbody>
</table>

2) In addition to knowing how to determine body mass index, the therapist must check their own biases / prejudices concerning obesity to make sure this does not interfere with treatment. Some therapists may be tempted to think of the individual as “lazy” when obesity for many individuals is a serious problem.

3) Physical Therapy considerations to manage obesity may include 1) therapeutic exercise and techniques to facilitate increased functional mobility levels 2) increased walking ability and 3) increasing activity tolerance. In addition, it may be appropriate to initiate a home exercise program and teach safe cardiovascular training techniques.

4) Occupational therapy considerations to help manage obesity may include 1) therapeutic exercise and techniques to facilitate increased functional level with dressing, bathing and other activities of daily living and 2) instruction on use of adaptive equipment as necessary.

5) Therapy sessions may need to start slow and build as you progress. You may want to consider spreading therapy over 2 to 3 sessions during the day.
Summary:
For the medically complex individual, it is imperative that clinicians are aware of and understand how to manage not only the diagnosis for which the individual was referred, but also the complicating medical conditions that may affect the rehabilitation process. There are many illnesses which can have an affect on the outcomes of your therapy some of which include but are not limited to the complexities discussed in this course:

- Rheumatoid Arthritis
- Osteoarthritis
- Chronic Obstructive Pulmonary Disease
- Congestive Heart Failure
- Coronary Heart Disease
- Hypertension
- Alzheimer’s Disease (and related dementias)
- Parkinson’s Disease
- Type 1 Diabetes
- Type 2 Diabetes
- Depression
- Anxiety
- Chronic Kidney Disease
- Obesity

It is the responsibility of the therapist to learn as much as they can about each of these and other illnesses and how to help the individual to self manage and/or how the therapist can help to clinically manage the medically complex individual. Taking the time and effort to incorporate into your treatment some basic techniques related to the above co-morbidities can make a significant impact on the effective delivery of therapy services and, ultimately improve the therapy outcomes and quality of life of those individuals that we serve.

Bibliography:


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Test for Management of Medical Complexities

1. Understanding medical complexities is important to the therapist because
   a. we can reduce the risks involved in treatment
   b. we can improve outcomes of treatment
   c. many of those we treat have co-existing diagnoses
   d. all of the above

2. The laws and regulations that govern our practice (CMS) do not take into account the existence of medical complexities.
   True or False

3. Common symptoms of arthritis include
   a. pain, joint swelling, frequent urination
   b. pain, joint stiffness, fatigue
   c. pain, confusion, and swelling

4. Which of the following is not a consideration when treating an individual with the complexity of arthritis:
   a. Utilize joint protection techniques
   b. Utilize pain scales to help in assessing levels of pain with certain activities
   c. Use heat when a joint is warm and swollen

5. Illnesses that may lead to Chronic Obstructive Pulmonary Disorder include
   a. Chronic bronchitis, asthma, parkinson’s disease
   b. Asthma, emphysema, osteoarthritis
   c. Emphysema, chronic bronchitis, asthma

6. Which of the following statements is true as a strategy for increasing endurance with exercise:
   a. Determine a time frame for exercise and then gradually decrease the work load
   b. Determine a time frame for exercise and then gradually increase the work load
   c. Set an intensity or workload and then gradually decrease the amount of time spent in the activity

7. Common breathing techniques taught to individuals with COPD include
   a. Pursed lip breathing and deep sighs
   b. Diaphragmatic breathing and pursed lip breathing
   c. Progressive muscle relaxation and diaphragmatic breathing

8. Which of the following is not a principle of energy conservation
   a. Incorporate rest breaks
   b. Prioritize and do the most important things first
   c. Plan ahead so that you can space out essential tasks
   d. Limit the amount of work by adding steps that are non-essential
9. Which of the following statements is true concerning the heart
   a. **The 2 chambers on the right side receive and pump blood to the lungs**
   b. The heart contains 2 chambers
   c. The right side of the heart pumps blood to the entire body
   d. The two chambers on the left side receive and pump blood to the lungs

10. “Pitting” edema is a characteristic symptom of which heart disease
    a. coronary artery disease
    b. **congestive heart failure**
    c. hypertension

11. MET stands for
    a. Metabolic Expression Tracking
    b. Metastasize Equivalency Tables
    c. **Metabolic Equivalency Tables**
    d. Metabolic Equivalency Tracking

12. Generally an individual with heart disease should not exceed
    a. 1-2 METS
    b. **3-6 METS**
    c. 6-9 METS

13. According to the Alzheimer’s Association, which of the following describes an individual in stage 5 of dementia
    a. mild cognitive decline
    b. decreased ability to remember names when introduced to new people
    c. May become confused about where they are or about the date, day of the week or season
    d. **Frequently individuals lose their capacity for recognizable speech, although words or phrases may occasionally be uttered**

14. Things that may be helpful when delivering therapy services to a dementia client include
    a. Utilizing cueing strategies
    b. Knowing good communication techniques for dementia
    c. **Simplifying the task you want them to accomplish**
    d. **all of the above**

15. One of the major considerations when dealing with an individual with a complexity of Parkinson’s disease is
    a. need to frequently urinate
    b. **high risk for falls**
    c. high probability of pain in joints
    d. may experience nausea and vomiting
16. Which of the following statements is true
   a. Type 1 diabetes is caused by an autoimmune disorder which destroys insulin producing cells therefore inhibiting the production of insulin
   b. Type 2 diabetes is caused by an autoimmune disorder which destroys insulin producing cells therefore inhibiting the production of insulin
   c. Type 1 diabetes is caused by an autoimmune disorder which destroys the pancreas therefore inhibiting the production of insulin
   d. Type 2 diabetes is caused by an autoimmune disorder which destroys the pancreas therefore inhibiting the production of insulin

17. If you suspect a person has become hypoglycemic during your therapy session and you are unable to check blood sugar levels
   a. stop the session and send them back to their room
   b. stop the session and begin recommended treatment for hypoglycemia
   c. continue with the session while beginning recommended treatment for hypoglycemia
   d. continue with the session after give a rest break

18. There is some research that shows a biological link between depression and anxiety. True or False

19. If a person becomes anxious during a therapy session
   a. Help them practice breathing techniques
   b. Continue to press them to perform or “fight through” the anxiety
   c. Help them practice progressive muscle relaxation
   d. a and c

20. Obesity is defined as having a BMI of over
   a. 20
   b. 25
   c. 30
   d. 35