## Sengamala Thayaar Educational Trust Women’s College

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**DIETETICS-II**

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**III B.SC NUTRITION AND DIETETICS**

**DIETETICS-II**

**Common Cardiovascular Diseases and Management in Older Patients**

*AtrialFibrillation*  
The prevalence of chronic atrial fibrillation rises from <1 per 1000 people at 25-35 years of age to about 40 per 100 at ages 80-90 (Framingham data, Baltimore Longitudinal Study, Cardiovascular Health Study). Chronic atrial fibrillation has been shown to be an important risk factor for cerebrovascular accidents (strokes) and control of rate is associated with better exercise tolerance. The goals of therapy in an individual patient may vary and include rate control, prevention of stroke, or restoration of sinus rhythm.

Rate control

Immediate or long-term rate control can be achieved with the use of digoxin, beta-blockers, calcium antagonists (verapamil or diltiazem), or amiodarone in refractory cases. There is less experience with the use of new Class III agents (ibutelide). The adequacy of rate control must be assessed with activity--more active patients are less likely to have adequate rate control with digoxin alone. Drug doses should be adjusted for age and disease state and one must remember that adequate rate control may be lost during acute illnesses such as pneumonia, but will be regained with treatment of the acute illness.

Prevention of stroke

with acceptable risk benefit ratios can be achieved with anticoagulation with coumadin. However, the optimal therapy to prevent stroke for the older patient with atrial fibrillation has not been found. This author favors anticoagulation with coumadin to a target INR of 2-2.5 with close monitoring in elderly patients without contraindications to anticoagulation, esp. in patients with additional risk factors for stroke (hypertension, vascular disease, prior CVA). Aspirin alone is not a reasonable choice in the latter group.

Restoration of sinus rhythm

should be considered in patients with abnormal cardiovascular function (esp. in the setting of aortic stenosis or hypertrophic cardiomyopathy), atrial fibrillation which is not of long-standing, or is difficult to control. This goal is more frequently sought in younger patients. Anticoagulation must be instituted prior to cardioversion and continue during the period of highest risk for fibrillation recurrence (?3mo). Analyses of risk of recurrence based on age alone have not been performed.

*Hypertension*  
The prevalence of hypertension--esp. systolic-- increases with aging in North American men and women. This increase in systolic pressure is thought to be due to thickening of the arterial wall which makes it less distensible and less able to buffer the rise in pressure that occurs with cardiac ejection. These changes result in an elevated systolic blood pressure with a relatively unchanged diastolic blood pressure. A large body of data have now demonstrated that cardiovascular morbidity and mortality increase with increasing systolic as well as diastolic blood pressure in the elderly. Furthermore, treatment of both diastolic and isolated systolic hypertension has been shown to decrease mortality and morbidity in both older men and women--there is a decrease in adverse events for every degree of blood pressure reduction toward the normal range. Treatment goals are now the same for older patients as they are for younger patients---systolic blood pressure < 140 mmHg and diastolic pressure < 90 mmHg.  
  
Treatment begins with diet (weight reduction if obese; low sodium for all, and < 1 oz of alcohol/day) and exercise. The long-term benefits of antihypertensive therapy in the elderly have been demonstrated for thiazide diuretics (chlorthalidone 12.5-25 mg/day, hydrochlorothiazide 25 mg/day) alone or in combination with beta-blockers (atenolol 50 mg/day, metoprolol 50 mg/day). Thiazide diuretics and/or beta blockers are recommended as first-line pharmacologic therapy for the older patient with hypertension (and no other diseases) because of demonstrated longevity benefit and lower cost. Alpha-methyl-dopamine and reserpine have also shown mortality benefits but are less widely used secondary to side effects. Calcium channel blockers, angiotensin converting enzyme (ACE) inhibitors, alpha-blockers, and angiotensinogen II inhibitors are highly effective in lowering blood pressure in older patients and may have advantages in hypertensive patients with multiple diseases (i.e., calcium channel blockers for coronary artery disease, cerebrovascular disease, diabetes, chronic obstructive pulmonary disease, diabetes with renal disease; ACE inhibitor for congestive heart failure, diabetic with renal failure, etc.; alpha blocker for prostate disease). Similarly, beta-blockers have an advantage in the post-myocardial infarction patient. No adverse effects on quality of life or mood have been demonstrated with the use of beta-blockers in the elderly in randomized clinical trials. All drug dosages should be adjusted for age and disease-related changes.

*Coronary Artery Disease*  
It has long been recognized that the prevalence of coronary artery disease rises with increasing age and that multi-vessel disease in older patients with coronary artery disease is more common. The age-related increase in coronary artery disease occurs in women as well as men but begins at a later age in women. The same risk factors that predict atherosclerosis in younger adults (lipid abnormalities, smoking, hypertension, diabetes) are predictive in older individuals as well. Modification of these risk factors is effective in reducing the risk of atherosclerosis in older patients. Therefore, preventive strategies for the older patient include stopping smoking, blood pressure control, control of lipid abnormalities, and treatment of diabetes.   
  
The approach to diagnosis in the elderly is similar to that in the younger patient. The history may be somewhat more difficult to interpret because exercise may be limited by other factors (arthritis, pulmonary disease, etc.) and chest discomfort may be atypical because of the prevalence of diabetes (10% of the elderly) and the greater preponderance of women in the older populations. ECG criteria for the diagnosis of coronary artery disease are also not as reliable in women of any age as in men. Nuclear imaging (usually thallium) with or without pharmacologic stress is often used to overcome the limits of ECG interpretation, but again is not as good in women as men (estimated 20% false positives). Because the prevalence of coronary artery disease is high in the elderly, the goal of diagnostic testing may be to quantify the amount of ischemia rather than to diagnose its presence and perfusion imaging allows localization, quantification, and differentiation between infarcted and ischemic myocardium. Pharmacologic stress testing combined with echocardiography may also have some advantages in the older patient since it can provide assessment of valvular function, left ventricular function, and the presence and extent of wall motion abnormalities indicative of ischemia or infarction. Angiography is of value for both assessment and as a prelude to interventions. Slightly greater complications are seen in older patients than in younger patients (local bleeding, stroke) but remain low. This should be recognized but should not preclude procedures.  
  
Treatment considerations for coronary artery disease in the older patient do not differ from those in the younger patient with coronary artery disease with the exception of the elderly diabetic patient with coronary artery disease (see below). The therapeutic choices include medications (nitrates, beta-blockers, calcium blockers), lipid lowering regimens (effective in older patients as well as young) and revascularization procedures. Note that resting heart rates should not be used as an indication of beta blockade or as a contraindication of beta blockade. Revascularization procedures (angioplasty or surgery) may be of greater benefit than pharmacologic therapy in patients with multivessel disease and decreased left ventricular function. In the elderly diabetic with multivessel disease, surgical intervention has a more favorable outcome than angioplasty. Complication rates for angioplasty and surgery are slightly higher in the older patient but still relatively low. It has been noted that fewer women than men have been treated with angioplasty or surgery and that women undergoing such procedures have more advanced disease. This finding could represent atypical presentation or failure of the medical community to recognize the prevalence of coronary artery disease in older women. Another current issue is the possible decrease in cognitive function in older patients undergoing coronary artery bypass graft procedures.

Myocardial infarction

The older patient with myocardial infarction also benefits from the same therapies as the younger patient and age >75 alone should not be a contraindication to thrombolytic therapy. Beta blockers and aspirin should be administered post-infarction. ACE inhibitors are also of probable benefit if given in lower doses and not during the immediate acute MI period. However, goals of the post-MI period may differ for the older patient vs. the younger patient. All physiologic processes related to healing and stress appear to be attenuated with aging, so timing for diagnostic testing after the acute event may need to be slightly later in older patients. In addition, the probability of post-MI ischemia is greater in the older patient because of the higher incidence of multivessel disease. No studies of predominantly older patients have been performed to identify the best post-MI strategy for further risk stratification and to guide in clinical decision making regarding medical vs. revascularization strategies. Therapy should therefore be individualized and it is not appropriate to consider the older patient, esp. in the presence of multiple diseases, as a "routine" post-MI pathway patient.

*Congestive Heart Failure*

Systolic

The therapy of congestive heart failure due to systolic dysfunction does not differ in the older patient. The mainstays of therapy are digoxin, diuretics, and esp. angiotensin converting enzyme inhibitor drugs. Renal function and potassium may need to be monitored more closely in the older patient because of the likely concomitant administration or ingestion of nonsteroidal anti-inflammatory drugs (high incidence of arthritis in the older population) and the additive effects of NSAID's to lower renal perfusion and potassium excretion. The role of beta blockers in the management of patients with congestive heart failure is just emerging and there are no data regarding the older patient.

Diastolic

Congestive heart failure with preserved left ventricular systolic function is termed "diastolic heart failure" and is more prevalent in the older population, may account for one half of the older population with congestive heart failure, and may be more common in women than men. The prognosis of patients with CHF due to diastolic dysfunction is less ominous than in patients with systolic dysfunction yet the morbidity can be high with frequent treatment failures and hospital readmissions. No long-term studies of drug therapies for diastolic congestive heart failure have been performed. Drugs which selectively affect diastolic filling and relaxation (calcium channel antagonists or beta-adrenergic blockers) can alter these parameters after short-term administration and might provide a specific therapy. However, one of the more surprising findings from a recent trial was the lower incidence of recurrent hospitalizations and death in patients with congestive heart failure who received digoxin (vs. placebo) in combination with diuretics and ACE inhibitors. This was true for CHF patients with both decreased and preserved systolic function. Thus, optimal management of the older patient with diastolic congestive heart failure is evolving. Control of hypertension, prevention of myocardial ischemia, treatment of congestive heart failure symptoms, and maintenance of normal sinus rhythm have received emphasis. It appears that digoxin and diuretics do play a role and that beta blockers and/or calcium blockers may also play a role. Treatment of acute exacerbation of congestive heart failure or pulmonary edema in the setting of diastolic heart failure focuses on diuretics and, if needed, positive inotropes on a short-term basis. The role of ACE inhibitors is unclear unless used for the treatment of hypertension or to attempt regression of hypertrophy.

Multidisciplinary team approach

The concept of a team approach for the care of the patient with congestive heart failure is rapidly gaining favor. The team compositions vary but usually consist of physicians and nurses and other health professionals (dieticians, social workers, physical therapists, or exercise technicians) who focus not only on medication prescribing but patient and family dietary education, close follow-up of weight and symptoms of patients in the home (phone or home care), with a goal of improving CHF and preventing hospitalizations. In a recently completed trial of older patients with congestive heart failure, the team care patients had fewer hospitalizations, improved perceived quality of life, and lower medical costs for up to one year after randomization, compared to the conventional care group. These data suggest that the geriatric multidisciplinary team approach is beneficial for cardiac diseases in the older patient.

*Valvular Diseases*

Aortic Stenosis

The frequency of aortic stenosis increases with age and it is the most clinically significant valvular lesion in the elderly. Progressive degenerative calcification is now the most common cause, as opposed to rheumatic disease. The calcification occurs along the margins of the valve leaflet (vs. commisural fusion in rheumatic fever) and thus does not affect valve opening or closing during the early stages but will produce a murmur. Because of the stiffened peripheral arteries in the older patient, the carotid pulse may feel normal to palpation even in the presence of significant aortic stenosis. Other physical findings associated with critical aortic stenosis due to rheumatic heart disease are often absent with calcific aortic stenosis (decreased S1 and S2). The intensity of the murmur does not correlate with the severity of stenosis. Progression to critical aortic stenosis is often gradual but is unpredictable. Therefore, diagnostic testing is essential for the diagnosis or evaluation of a symptomatic elderly patient with an aortic systolic murmur. Fortunately, noninvasive echocardiographic and Doppler testing can now accurately assess the severity of obstruction as well as define the aortic valve. About 20% of elderly patients with aortic disease have a rheumatic etiology--these patients usually have associated mitral valve disease and should receive antibiotic prophylaxis before all invasive procedures including dental procedures. The only effective treatment for critical aortic stenosis is surgical. Aortic valve replacement, even in older patients, improves survival and quality of life. Experience with aortic balloon valvuloplasty shows that re-stenosis occurs frequently within months and it has thus been largely abandoned.

Aortic Regurgitation

The most common cause of aortic regurgitation in the elderly is aortic root dilation secondary to the age-related rise in blood pressure and increased peripheral resistance. With the advent of widespread echocardiography, mild degrees of aortic regurgitation are diagnosed frequently and are usually not of clinical significance. Aortic regurgitation due to rheumatic valvular disease or associated with disease of a bicuspid valve is more likely to progress to clinically significant disease. When significant aortic regurgitation is present, therapy is aimed at afterload reduction and clinical symptom relief with monitoring for definitive surgical intervention prior to left ventricular failure.

Mitral valve disease

Mitral regurgitation accounts for 2/3 of mitral valve disease in the elderly. The etiologies include rheumatic disease (usually with concomitant aortic disease), papillary muscle dysfunction due to ischemia or infarction, calcification of the mitral annulus (more common in women than men), and myxomatous degeneration causing mitral valve prolapse. Medical management centers on maintenance of sinus rhythm or control of atrial fibrillation, afterload reduction and prevention of infection by use of prophylactic antibiotic regimens before all invasive procedures (including dental). The subset of patients with significant mitral regurgitation and mitral valve prolapse may have an increased risk for stroke and should be considered for anticoagulation. Acute symptoms may also benefit from diuretics. As disease progresses, the ventricle dilates and pulmonary hypertension develops and medical treatment is no longer effective. Surgical interventions have the best results prior to the development of ventricular dysfunction or marked dilation. Operative results to date show return toward normal pressures and ventricular size, but improvement is not as marked as that seen after aortic valve replacement. Therefore, optimal surgical timing has not been identified but morbidity and mortality are high once left ventricular failure occurs. Surgical repair as opposed to replacement is currently being used and evaluated for patients with regurgitation and noncalcified, nonstenotic valves. This may preclude the need for anticoagulation with mechanical valves, which could potentially be of clinical advantage in the older patient since surgical mitral valve replacement (whether it is a tissue or mechanical valve) requires lifelong high intensity anticoagulation. The management of the less common mitral stenosis in the elderly also targets control of heart rate and symptoms (digoxin and diuretics), anticoagulation to prevent emboli, and antibiotic prophylaxis to prevent infections. Surgical therapy is the only definitive therapy. Valvuloplasty is seldom of long-  
term benefit.

Senior Arthritis: Symptoms & Care

Most people commonly think of arthritis as the condition of having painful, stiff joints. In fact, there are many kinds of arthritis, each with different symptoms and treatments. Most types of arthritis are chronic with symptoms lasting years.

Arthritis can attack joints in almost any part of the body. Some forms of arthritis cause changes you can see and feel such as pain, swelling, warmth and redness in your joints. Other types cause less troublesome symptoms, but slowly damage your joints.

Arthritis is one of the most common diseases in this country. Millions of adults and half of all people age 65 and older are troubled by this disease. Older people most often have osteoarthritis, rheumatoid arthritis, or gout.

**OSTEOARTHRITIS**

Osteoarthritis (OA) is the most common type of arthritis in older people. OA starts when cartilage begins to become ragged and wears away. Cartilage is the tissue that pads bones in a joint. At OA's worst, all of the cartilage in a joint wears away, leaving bones that rub against each other. You are most likely to have OA in your hands, neck, lower back, or the large weight-bearing joints of your body, such as knees and hips.

OA symptoms can range from stiffness and mild pain that comes and goes with activities like walking, bending, or stooping to severe joint pain that keeps on even when you rest or try to sleep. Sometimes OA causes your joints to feel stiff when you haven't moved them in a while, like after riding in the car. But the stiffness goes away when you move the joint. In time OA can also cause problems moving joints and sometimes disability if your back, knees, or hips are affected.

What causes OA? Growing older is what most often puts you at risk for OA. Other than that, scientists think the cause depends on which part of the body is involved. For example, OA in the hands or hips may run in families. OA in the knees can be linked with being overweight. Injuries or overuse may cause OA in joints such as knees, hips, or hands.

**RHEUMATOID ARTHRITIS**

Rheumatoid Arthritis (RA) is an autoimmune disease. In RA, that means your body attacks the lining of a joint just as it would if it were trying to protect you from injury or disease. For example, if you had a splinter in your finger, the finger would become inflamed-painful, red, and swollen. RA leads to inflammationin your joints. This inflammation causes pain, swelling, and stiffness that lasts for hours. This can often happen in many different joints at the same time. You might not even be able to move the joint. People with RA often don't feel well. They may be tired or run a fever. People of any age can develop RA, and it is more common in women.

RA can attack almost any joint in the body, including the joints in the fingers, wrists, shoulders, elbows, hips, knees, ankles, [feet](http://www.aplaceformom.com/senior-care-resources/articles/foot-health-information), and neck. If you have RA in a joint on one side of the body, the same joint on the other side of your body will probably have RA also. RA not only destroys joints. It can also attack organs such as the heart, muscles, blood vessels, nervous system, and eyes.

Gout is one of the most painful forms of arthritis. An attack can begin when crystals of uric acid form in the connective tissue and/or joint spaces. These deposits lead to swelling, redness, heat, pain, and stiffness in the joint. Gout attacks often follow eating foods like shellfish, liver, dried beans, peas, anchovies, or gravy. Using alcohol, being overweight, and certain medications may also make gout worse. In older people, some blood pressure medicines can also increase your chance of a gout attack.

Gout is most often a problem in the big toe, but it can affect other joints, including your ankle, elbow, knee, wrist, hand, or other toes. Swelling may cause the skin to pull tightly around the joint and make the area red or purple and very tender. Your doctor might suggest blood tests and x-rays. He or she might also take a sample of fluid from your joint while you are having an attack.

Other forms of arthritis include psoriatic arthritis (in people with the skin condition psoriasis), ankylosing spondylitis (which mostly affects the spine), reactive arthritis (arthritis that occurs as a reaction to another illness in the body), and arthritis in the temporomandibular joint (where the jaw joins the skull).

**ARTHRITIS SYMPTOMS**

Common symptoms include:

* Lasting joint pain
* Joint swelling
* Joint stiffness
* Tenderness or pain when touching a joint
* Problems using or moving a joint normally
* Warmth and redness in a joint

If any of these symptoms lasts longer than two weeks, see your regular doctor or a rheumatologist. If you have a fever, feel physically ill, suddenly have a swollen joint, or have problems using your joint, see your doctor sooner. Your health care provider will ask questions about your symptoms and do a physical exam. He or she may take x-rays or do lab tests before suggesting a treatment plan.

**ARTHRITIS TREATMENT**

Each kind of arthritis is handled a little differently, but there are some common treatment choices. Rest, exercise, eating a healthy, well-balanced diet, and learning the right way to use and protect your joints are key to living with any kind of arthritis. The right shoes and a cane can help with pain in the feet, knees, and hips when walking. You can also find gadgets to help you open jars and bottles or to turn the door knobs in your house more easily.

In addition, there are also medicines that can help with the pain and swelling. Acetaminophen can safely ease arthritis pain. Some NSAIDs (nonsteroidalanti-inflammatorydrugs), like ibuprofen and naproxen, are sold without a prescription. Other NSAIDs must be prescribed by a doctor. But in 2005, the US Food and Drug Administration (FDA) warned people about the possible side effects of some NSAIDs, both those sold with or without a prescription. You should read the warnings on the package or insert that comes with the drug. Talk to your doctor about if and how you should use acetaminophen or NSAIDs for your arthritis pain.

* **Osteoarthritis**  
  Medicines can help you control OA pain. Rest and exercise will make it easier for you to move your joints. Keeping your weight down is a good idea. If pain from OA in your knee is very bad, your doctor might give you shots in the joint. This can help you to move your knee and get about without pain. Some people have surgery to repair or replace damaged joints.
* **Rheumatoid Arthritis**  
  With treatment, the pain and swelling from RA will get better, and joint damage might slow down or stop. You may find it easier to move around, and you will just feel better. In addition to pain and anti-inflammatory medicines, your doctor might suggest anti-rheumatic drugs, called DMARDs (disease-modifyingantirheumaticdrugs). These can slow damage from the disease. Medicines like prednisone, known as corticosteroids, can ease swelling while you wait for DMARDs to take effect. Another type of drug, biologic response modifiers, blocks the damage done by the immune system. They sometimes help people with mild-to-moderate RA when other treatments have not worked.
* **Gout**  
  If you have had an attack of gout, talk to your doctor to learn why you had the attack and how to prevent future attacks. The most common treatment for an acute attack of gout uses NSAIDs or corticosteroids like prednisone. This reduces swelling, so you may start to feel better within a few hours after treatment. The attack usually goes away fully within a few days. If you have had several attacks, your doctor can prescribe medicines to prevent future ones.

**EXERCISE CAN HELP**

Along with taking the right medicine and properly resting your joints, exercise is a good way to stay fit, keep muscles strong, and control arthritis symptoms. Daily exercise, such as walking or swimming, helps keep joints moving, decreases pain, and makes muscles around the joints stronger.

* **Range-of-motion Exercises**:  Dancing and yoga both relieve stiffness, keep you flexible, and help you keep moving your joints.
* **Strengthening Exercises**:  Weight training will keep or build muscle strength. Strong muscles support and protect your joints.
* **Aerobic and Endurance Exercises**: Bicycle riding and running make your heart and arteries healthier, help prevent weight gain, and improve the overall working of your body. Aerobic exercise also may decrease swelling in some joints.

**ALTERNATIVE REMEDIES**

Along with exercise and weight control, there are other ways to ease the pain around joints. You might find comfort by applying heat or cold, soaking in a warm bath, or swimming in a heated pool.

Your doctor may suggest surgery when damage to your joints becomes disabling or when other treatments do not help with pain. Surgeons can repair or replace these joints with artificial (man-made) ones. In the most common operations, doctors replace hips and knees.

Recent studies suggest that Chinese acupuncture may ease OA pain for some people. Research now shows that the dietary supplements glucosamine and chondroitin may help lessen your OA pain. However, more information is needed before anyone can be sure.

Many people with arthritis try remedies that have not been scientifically tested or proven helpful. Some remedies, such as snake venom, are harmful. Others, such as copper bracelets, are harmless, but also unproven.

How can you tell that a remedy may be unproven?

* The remedy claims that a treatment, like a lotion or cream, works for all types of arthritis and other diseases.
* Scientific support comes from only one research study.
* The label has no directions for use or warning about side effects.

The elderly are five times more likely than younger adults to develop problems related to constipation.

**Causes of constipation in the elderly**

Some of the reasons for this propensity include poor diet, lack of adequate fluids in diet, lack of exercise, the use of certain drugs to treat other medical conditions, and poor bowel habits.

In addition there is a psychological angle and many older adults are excessively concerned about their bowel movements and constipation is frequently an imaginary ailment.

There is often a lack of interest in eating that is seen in single or widowed older people. This leads to over use of convenience foods, which tend to be low in fiber.

Loss of teeth may further make eating regular meals difficult. Many older adults thus choose soft, processed foods that are low in fiber.

Many older adults suffer from urinary incontinence and stress incontinence. They may take inadequate fluids in order to avoid urinating. The fluids are also deficient in diet if the elderly are not eating regular or balanced meals. Water and other fluids add bulk to stools relieving constipation and making stools soft.

Another major cause for constipation in the elderly is prolonged bed rest or being bed ridden for example, after an accident or during an illness. Lack of movement and exercise may contribute to constipation.

Drugs prescribed for several medical conditions may lead to constipation among the elderly. Some of these include antidepressants, antacids containing aluminum or calcium, antihistamines, diuretics, and anti-Parkinsonism drugs.

Fearing constipation is common among the elderly and this sometimes leads older people to depend heavily on stimulant laxatives. These are habit forming and the bowel movements begin to depend on laxatives and over time, the natural mechanisms fail to work without the help of drugs. Habitual use of enemas also can lead to a loss of normal bowel movements.

**Types of constipation among elderly**

**Normal transit constipation**

This is the most common subtype of primary constipation. Here, despite the stool passing through the colon at a normal rate, patients perceive difficulty in evacuating their bowels. This is commonly seen along with irritable bowel syndrome with constipation. The primary distinction between chronic constipation and Irritable bowel syndrome (IBS) is the abdominal pain or discomfort seen in IBS.

**Slow-transit constipation**

This condition is seen more commonly among women. There are infrequent bowel movements, limited urgency, or straining to defecate. The colonic movements are slow.

**Pelvic floor dysfunction**

There is a problem in the muscles of the pelvic floor or around the anus (anal sphincter). These patients have a poor ability to co-ordinate these muscles during defecation. There is a feeling of incomplete evacuation. There is an overlap of this condition with slow transit colon.

**Diagnosis of constipation in elderly**

Diagnosis begins with detailed history and physical examination. Drug induced constipation, constipation due to prolonged inactivity and changes in diet and fluid intake may be diagnosed from history.

New onset constipation, worsening of constipation, blood in the stools, unexplained weight loss, fever, nausea, vomiting, loss of appetite, family history of inflammatory bowel disease or colon cancer in older adults over the age of 50 years need to be evaluated carefully for other conditions underlying constipation including colon and rectal cancers.

A general examination is next undertaken to evaluate the presence of other causes of constipation. Other causes that may affect other body systems and manifest as constipation include:

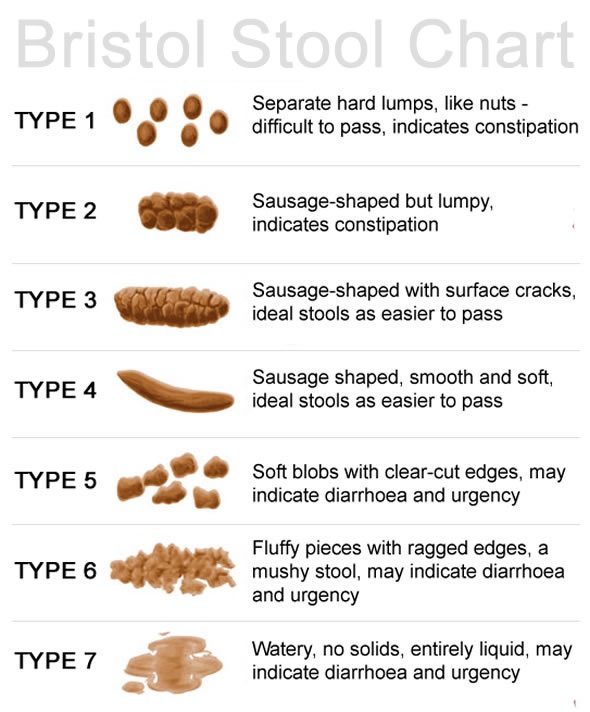
* heart diseases like heart failure
* Diabetes mellitus
* hypothyroidism (underactive thyroid)
* hypercalcaemia (increased blood calcium)
* hypokalaemia (low blood potassium)
* hypermagnesaemia (increased blood magnesium)
* hyperparathyroidism (overactive parathyroid glands) etc.

Some muscle and nerve disorders that may cause constipation include dermatomyositis, systemic sclerosis, autonomic neuropathy, Parkinson’s disease, spinal cord lesion (tumours or injury) and presence of dementia and depression.

Some diseases of the gastrointestinal system may also lead to constipation. These include anal fissure, diverticular disease, strictures, irritable bowel disease, rectal prolapsed, volvulus, megacolon etc.

The stool consistency and type is noted and classified according to the Bristol stool chart. This helps determine the colonic transit time. Type 1 stool in the takes about 100 hours (slow transit) while Type 7 takes approximately 10 hours (rapid transit).

Investigations for diagnosis of underlying conditions include full blood count to exclude anaemia and thyroid function test to exclude hypothyroidism.



Imaging studies are used to rule out obstruction leading to constipation. Some of the imaging studies include air contrast barium enema that can help detect an obstructing colon cancer, intermittent volvulus, or colonic stricture.

Dynamic pelvic magnetic resonance imaging (MRI) helps in assessment of the anatomy during defaecation and therefore may identify pelvic floor dysfunction.

Other tests include Lower Gastrointestinal (GI)endoscopy, anorectal manometry, electromyography and defaecography.

**Management of constipation in elderly**

The aims of management of chronic constipation in the elderly are to restore normal bowel habits and ensure passage of soft, formed stool at least three times a week, without straining, and to improve the quality of life with minimal side effects.

Lifestyle changes include increased physical activity, eating a healthy and balanced diet with adequate fibers and fluids. There should be reduction in consumption of coffee, tea and alcohol as much as possible, and patients should consume extra glass of water for every drink of coffee, tea or alcohol.

Bowel training is also an important measure. The optimal times to have a bowel movement are soon after waking and soon after meals, when colonic transit is greatest. Patients are taught to recognize and promptly respond to the urge to pass stools. Failure to do so can result in a build up of stools and constipation. Patients are advised to adopt a “semisquatting” position to defecate. This could be achieved by using a footstool and leaning forward on the toilet.

Apart from fibers in foods patients are advised to take fibre/bulk supplements Psyllium (ispaghula husk), methylcellulose, polycarbophil, or bran.

Medications include osmotic laxatives, stimulant laxatives, and other agents. Bulk laxatives include Psyllium (ispaghula husk), methylcellulose, polycarbophil, bran.

Osmotic laxatives include lactulose, sorbitol, mannitol, salts of magnesia, sulphate, phosphate, polyethylene glycol.

Stimulant laxatives include Senna, cascara and Diphenlmethane derivatives include bisacodyl.

There are enemas, liquid paraffin, phosphates, lubricants for fecal impaction as well.

Other options include sacral nerve stimulation, biofeedback system and surgery for refractory and severe cases.

*Reviewed by April Cashin-Garbutt, BA Hons (Cantab)*

Alzheimer’s disease is an irreversible, progressive brain disorder that slowly destroys memory and thinking skills, and eventually the ability to carry out the simplest tasks. In most people with Alzheimer’s, [symptoms](https://www.nia.nih.gov/health/alzheimers/symptoms) first appear in their mid-60s. Estimates vary, but experts suggest that more than 5 million Americans may have Alzheimer’s.

Alzheimer's disease is currently ranked as the sixth leading cause of death in the United States, but [recent estimates](https://www.nia.nih.gov/news/number-alzheimers-deaths-found-be-underreported)indicate that the disorder may rank third, just behind [heart disease](https://www.nia.nih.gov/health/heart-health) and cancer, as a cause of death for older people.

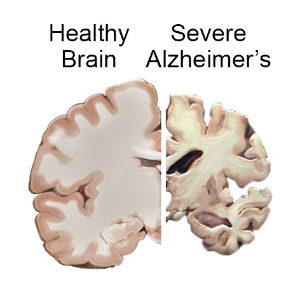
Alzheimer’s is the most common cause of dementia among older adults. [Dementia](https://www.nia.nih.gov/health/what-dementia) is the loss of cognitive functioning—thinking, remembering, and reasoning—and behavioral abilities to such an extent that it interferes with a person’s daily life and activities. Dementia ranges in severity from the mildest stage, when it is just beginning to affect a person’s functioning, to the most severe stage, when the person must depend completely on others for basic activities of daily living.

The causes of dementia can vary, depending on the types of brain changes that may be taking place. Other dementias include [Lewy body dementia](https://www.nia.nih.gov/health/what-lewy-body-dementia), [frontotemporal disorders](https://www.nia.nih.gov/health/what-are-frontotemporal-disorders), and [vascular dementia](https://www.nia.nih.gov/health/what-vascular-dementia). It is common for people to have [mixed dementia](https://www.nia.nih.gov/health/what-mixed-dementia)—a combination of two or more disorders, at least one of which is dementia. For example, some people have both Alzheimer's disease and vascular dementia.

Alzheimer’s disease is named after Dr. Alois Alzheimer. In 1906, Dr. Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness. Her symptoms included memory loss, language problems, and unpredictable behavior. After she died, he examined her brain and found many abnormal clumps (now called amyloid plaques) and tangled bundles of fibers (now called neurofibrillary, or tau, tangles).

These plaques and tangles in the brain are still considered some of the main features of Alzheimer’s disease. Another feature is the loss of connections between nerve cells (neurons) in the brain. Neurons transmit messages between different parts of the brain, and from the brain to muscles and organs in the body.

## Changes in the Brain

Scientists continue to unravel the complex brain changes involved in the onset and progression of Alzheimer’s disease. It seems likely that damage to the brain starts a decade or more before memory and other cognitive problems appear. During this preclinical stage of Alzheimer’s disease, people seem to be symptom-free, but toxic changes are taking place in the brain. Abnormal deposits of proteins form amyloid plaques and tau tangles throughout the brain, and once-healthy neurons stop functioning, lose connections with other neurons, and die.

The damage initially appears to take place in the hippocampus, the part of the brain essential in forming memories. As more neurons die, additional parts of the brain are affected, and they begin to shrink. By the final stage of Alzheimer’s, damage is widespread, and brain tissue has shrunk significantly.

### Signs and Symptoms

[Memory problems](https://www.nia.nih.gov/health/do-memory-problems-always-mean-alzheimers-disease) are typically one of the first signs of cognitive impairment related to Alzheimer’s disease. Some people with memory problems have a condition called [mild cognitive impairment](https://www.nia.nih.gov/health/what-mild-cognitive-impairment) (MCI). In MCI, people have more memory problems than normal for their age, but their symptoms do not interfere with their everyday lives. Movement difficulties and problems with the sense of [smell](https://www.nia.nih.gov/health/smell-and-taste) have also been linked to MCI. Older people with MCI are at greater risk for developing Alzheimer's, but not all of them do. Some may even go back to normal cognition.

The first symptoms of Alzheimer's vary from person to person. For many, decline in non-memory aspects of cognition, such as word-finding, vision/spatial issues, and impaired reasoning or judgment, may signal the very early stages of Alzheimer’s disease. Researchers are studying biomarkers (biological signs of disease found in brain images, cerebrospinal fluid, and blood) to see if they can detect early changes in the brains of people with MCI and in cognitively normal people who may be at greater risk for Alzheimer’s. Studies indicate that such early detection may be possible, but more research is needed before these techniques can be relied upon to diagnose Alzheimer's disease in everyday medical practice.

### Mild Alzheimer’s Disease

As Alzheimer’s disease progresses, people experience greater memory loss and other cognitive difficulties. Problems can include [wandering](https://www.nia.nih.gov/health/wandering-and-alzheimers-disease) and getting lost, trouble [handling money and paying bills](https://www.nia.nih.gov/health/managing-money-problems-alzheimers-disease), repeating questions, taking longer to complete normal daily tasks, and [personality and behavior changes](https://www.nia.nih.gov/health/managing-personality-and-behavior-changes-alzheimers). People are often diagnosed in this stage.

### Moderate Alzheimer’s Disease

In this stage, damage occurs in areas of the brain that control language, reasoning, sensory processing, and conscious thought. Memory loss and confusion grow worse, and people begin to have problems recognizing family and friends. They may be unable to learn new things, carry out multistep tasks such as getting dressed, or cope with new situations. In addition, people at this stage may have [hallucinations, delusions, and paranoia](https://www.nia.nih.gov/health/alzheimers-and-hallucinations-delusions-and-paranoia) and may behave impulsively.

### Severe Alzheimer’s Disease

Ultimately, plaques and tangles spread throughout the brain, and brain tissue shrinks significantly. People with severe Alzheimer’s cannot communicate and are completely dependent on others for their care. [Near the end](https://www.nia.nih.gov/health/end-life-care-people-dementia), the person may be in bed most or all of the time as the body shuts down.

## What Causes Alzheimer’s

Scientists don’t yet fully understand [what causes Alzheimer’s disease](https://www.nia.nih.gov/health/what-causes-alzheimers-disease) in most people. There is a genetic component to some cases of early-onset Alzheimer’s disease. Late-onset Alzheimer's arises from a complex series of brain changes that occur over decades. The causes probably include a combination of genetic, environmental, and lifestyle factors. The importance of any one of these factors in increasing or decreasing the risk of developing Alzheimer’s may differ from person to person.

### The Basics of Alzheimer’s

Scientists are conducting studies to learn more about plaques, tangles, and other biological features of Alzheimer’s disease. Advances in brain imaging techniques allow researchers to see the development and spread of abnormal amyloid and tau proteins in the living brain, as well as changes in brain structure and function. Scientists are also exploring the very earliest steps in the disease process by studying changes in the brain and body fluids that can be detected years before Alzheimer’s symptoms appear. Findings from these studies will help in understanding the causes of Alzheimer's and make diagnosis easier.

One of the great mysteries of Alzheimer’s disease is why it largely strikes older adults. Research on normal brain aging is shedding light on this question. For example, scientists are learning how age-related changes in the brain may harm neurons and contribute to Alzheimer’s damage. These age-related changes include atrophy (shrinking) of certain parts of the brain, inflammation, production of unstable molecules called free radicals, and mitochondrial dysfunction (a breakdown of energy production within a cell).

### Genetics

Most people with Alzheimer’s have the late-onset form of the disease, in which symptoms become apparent in their mid-60s. The apolipoprotein E (APOE) gene is involved in late-onset Alzheimer’s. This gene has several forms. One of them, APOE ε4, increases a person’s risk of developing the disease and is also associated with an earlier age of disease onset. However, carrying the APOE ε4 form of the gene does not mean that a person will definitely develop Alzheimer’s disease, and some people with no APOE ε4 may also develop the disease.

Also, scientists have identified a number of regions of interest in the genome (an organism's complete set of DNA) that may increase a person's risk for late-onset Alzheimer's to varying degrees.

Early-onset Alzheimer’s disease occurs between a person’s 30s to mid-60s and represents less than 10 percent of all people with Alzheimer’s. Some cases are caused by an inherited change in one of three genes, resulting in a type known as early-onset familial Alzheimer’s disease, or FAD. For other cases of early-onset Alzheimer’s, research suggests there may be a genetic component related to factors other than these three genes.

Most people with Down syndrome develop Alzheimer's. This may be because people with Down syndrome have an extra copy of chromosome 21, which contains the gene that generates harmful amyloid.

For more about this area of research, see NIA's [Alzheimer’s Disease Genetics Fact Sheet](https://www.nia.nih.gov/health/alzheimers-disease-genetics-fact-sheet).

### Health, Environmental, and Lifestyle Factors

Research suggests that a host of factors beyond genetics may play a role in the development and course of Alzheimer’s disease. There is a great deal of interest, for example, in the relationship between cognitive decline and vascular conditions such as [heart disease](https://www.nia.nih.gov/health/heart-health), [stroke](https://www.nia.nih.gov/health/stroke), and [high blood pressure](https://www.nia.nih.gov/health/high-blood-pressure), as well as metabolic conditions such as [diabetes](https://www.nia.nih.gov/health/diabetes-older-people) and obesity. Ongoing research will help us understand whether and how reducing risk factors for these conditions may also reduce the risk of Alzheimer’s.

A [nutritious diet](https://www.nia.nih.gov/health/healthy-eating), [physical activity](https://www.nia.nih.gov/health/staying-physically-active-alzheimers), [social engagement](https://www.nia.nih.gov/health/participating-activities-you-enjoy), and mentally stimulating pursuits have all been associated with helping people stay healthy as they age. These factors might also help [reduce the risk](https://www.nia.nih.gov/health/assessing-risk-alzheimers-disease) of cognitive decline and Alzheimer’s disease. Clinical trials are testing some of these possibilities.

## Diagnosis of Alzheimer’s Disease

Doctors use several methods and tools to help determine whether a person who is having memory problems has “possible Alzheimer’s dementia” (dementia may be due to another cause) or “probable Alzheimer’s dementia” (no other cause for dementia can be found).

To [diagnose](https://www.nia.nih.gov/health/how-alzheimers-disease-diagnosed) Alzheimer’s, doctors may:

* Ask the person and a family member or friend questions about overall health, past medical problems, ability to carry out daily activities, and changes in behavior and personality
* Conduct tests of memory, problem solving, attention, counting, and language
* Carry out standard medical tests, such as blood and urine tests, to identify other possible causes of the problem
* Perform brain scans, such as computed tomography (CT), magnetic resonance imaging (MRI), or positron emission tomography (PET), to rule out other possible causes for symptoms.

These tests may be repeated to give doctors information about how the person’s memory and other cognitive functions are changing over time.

Alzheimer's disease can be definitely diagnosed only after death, by linking clinical measures with an examination of brain tissue in an autopsy.

People with memory and thinking concerns should [talk to their doctor](https://www.nia.nih.gov/health/tips-discussing-sensitive-topics-your-doctor) to find out whether their symptoms are due to Alzheimer’s or another cause, such as [stroke](https://www.nia.nih.gov/health/stroke), tumor, [Parkinson’s disease](https://www.nia.nih.gov/health/parkinsons-disease), [sleep disturbances](https://www.nia.nih.gov/health/good-nights-sleep), [side effects of medication](https://www.nia.nih.gov/health/safe-use-medicines-older-adults), an infection, or a [non-Alzheimer's dementia](https://www.nia.nih.gov/health/alzheimers/related-dementias). Some of these conditions may be treatable and possibly reversible.

[If the diagnosis is Alzheimer's](https://www.nia.nih.gov/health/now-what-next-steps-after-alzheimers-diagnosis), beginning treatment early in the disease process may help preserve daily functioning for some time, even though the underlying disease process cannot be stopped or reversed. An early diagnosis also helps families plan for the future. They can take care of [financial and legal matters](https://www.nia.nih.gov/health/legal-and-financial-planning-people-alzheimers), address potential [safety issues](https://www.nia.nih.gov/health/home-safety-and-alzheimers-disease), learn about living arrangements, and develop support networks.

In addition, an early diagnosis gives people greater opportunities to participate in clinical trials that are testing possible new treatments for Alzheimer's disease or other research studies.

# Participating in Clinical Trials

Everybody—those with Alzheimer’s disease or MCI as well as healthy volunteers with or without a family history of Alzheimer’s—may be able to take part in clinical trials and studies. Participants in Alzheimer's clinical research help scientists learn how the brain changes in healthy aging and in Alzheimer’s. Currently, at least 70,000 volunteers are needed to participate in more than 150 active clinical trials and studies that are testing ways to understand, diagnose, treat, and prevent Alzheimer's disease.

Volunteering for a clinical trial is one way to help in the fight against Alzheimer's disease. Studies need participants of different ages, sexes, races, and ethnicities to ensure that results are meaningful for many people.

The National Institute on Aging (NIA) at the National Institutes of Health (NIH) leads the Federal Government’s research efforts on Alzheimer’s. NIA-supported [Alzheimer’s Disease Centers](https://www.nia.nih.gov/health/alzheimers-disease-research-centers) throughout the United States conduct a wide range of research, including studies of the causes, diagnosis, and management of Alzheimer’s. NIA also sponsors the [Alzheimer’s Disease Cooperative Study](https://www.nia.nih.gov/research/dn/alzheimers-disease-cooperative-study-adcs) (ADCS), a consortium of leading researchers throughout the United States and Canada who conduct clinical trials.

To find out more about Alzheimer’s clinical trials and studies:

* Talk to your healthcare provider about local studies that may be right for you.
* Contact [Alzheimer's disease centers](https://www.nia.nih.gov/health/alzheimers-disease-research-centers) or memory or neurology clinics in your community.
* Search the [ADEAR Center clinical trials finder](https://www.nia.nih.gov/alzheimers/clinical-trials) for a trial near you or to [sign up for email alerts](https://www.nia.nih.gov/about/stay-connected) about new trials.
* Sign up for a registry (such as the [Alzheimer's Prevention Registry](http://www.endalznow.org/)) or matching service (such as [TrialMatch](http://www.alz.org/research/clinical_trials/find_clinical_trials_trialmatch.asp)) to be invited to participate in studies.

Learn more about [participating in Alzheimer's disease research](https://www.nia.nih.gov/health/participating-alzheimers-disease-research).

## Treatment of Alzheimer’s Disease

Alzheimer’s disease is complex, and it is unlikely that any one drug or other intervention can successfully [treat](https://www.nia.nih.gov/health/how-alzheimers-disease-treated) it. Current approaches focus on helping people maintain mental function, manage behavioral symptoms, and slow or delay the symptoms of disease. Researchers hope to develop therapies targeting specific genetic, molecular, and cellular mechanisms so that the actual underlying cause of the disease can be stopped or prevented.

### Maintaining Mental Function

[Several medications](https://www.nia.nih.gov/health/how-alzheimers-disease-treated) are approved by the U.S. Food and Drug Administration (FDA) to treat symptoms of Alzheimer’s. Donepezil (Aricept®), rivastigmine (Exelon®), and galantamine (Razadyne®) are used to treat mild to moderate Alzheimer’s (donepezil can be used for severe Alzheimer’s as well). Memantine (Namenda®) is used to treat moderate to severe Alzheimer’s. These drugs work by regulating neurotransmitters, the chemicals that transmit messages between neurons. They may help maintain thinking, memory, and communication skills, and help with certain behavioral problems. However, these drugs don’t change the underlying disease process. They are effective for some but not all people, and may help only for a limited time. The FDA has also approved Aricept® and Namzaric®, a combination of Namenda® and Aricept®, for the treatment of moderate to severe Alzheimer’s disease.

### Managing Behavior

Common behavioral symptoms of Alzheimer’s include [sleeplessness](https://www.nia.nih.gov/health/6-tips-managing-sleep-problems-alzheimers), [wandering](https://www.nia.nih.gov/health/wandering-and-alzheimers-disease), [agitation](https://www.nia.nih.gov/health/coping-agitation-and-aggression-alzheimers-disease), anxiety, and [aggression](https://www.nia.nih.gov/health/coping-agitation-and-aggression-alzheimers-disease). Scientists are learning why these symptoms occur and are studying new treatments—drug and non-drug—to manage them. Research has shown that treating [behavioral symptoms](https://www.nia.nih.gov/health/managing-personality-and-behavior-changes-alzheimers#personality) can make people with Alzheimer’s more comfortable and makes things easier for caregivers.

### Looking for New Treatments

Alzheimer’s disease research has developed to a point where scientists can look beyond treating symptoms to think about addressing underlying disease processes. In ongoing clinical trials, scientists are developing and testing several possible interventions, including immunization therapy, drug therapies, cognitive training, physical activity, and treatments used for cardiovascular disease and diabetes.

## Support for Families and Caregivers

Caring for a person with Alzheimer’s disease can have high physical, emotional, and financial costs. The demands of day-to-day care, changes in family roles, and decisions about placement in a care facility can be difficult. There are several evidence-based approaches and programs that can help, and researchers are continuing to look for new and better ways to support caregivers.

Becoming well-informed about the disease is one important long-term strategy. Programs that teach families about the various stages of Alzheimer’s and about ways to deal with difficult behaviors and other caregiving challenges can help.

Good coping skills, a strong support network, and respite care are other ways that help caregivers handle the stress of caring for a loved one with Alzheimer’s disease. For example, staying physically active provides physical and emotional benefits.

Some caregivers have found that joining a support group is a critical lifeline. These support groups allow caregivers to find respite, express concerns, share experiences, get tips, and receive emotional comfort. Many organizations sponsor in-person and online support groups, including groups for people with early-stage Alzheimer’s and their families.