

# Early Retirement

Brandy L. Johnson

Early retirement is a term that has more than one meaning. Early retirement can refer to the age an individual can start to receive Social Security benefits. The term can also refer to the practice of retiring before reaching an employer's official retirement age.

As applied to Social Security, early retirement refers to the practice of retiring before reaching 65. Individuals who wish to retire early can start receiving their Social Security benefits after turning 62. However, when individuals start to receive their benefits before the age of 65, their benefits will be reduced a fraction of a percent for each month before their full retirement age. Thus, as a general rule, early retirement will provide about the same total of Social Security benefits over an individual's lifetime, but they will be paid out in smaller amounts. The advantage to early retirement is that an individual can collect benefits for a longer period of time. The disadvantage, however, is that the individual's benefit is permanently reduced.

As stated, when applied to an individual's employer, early retirement refers to the practice of retiring before reaching the employer's official retirement age. Many businesses offer early retirement packages meant to encourage employees to opt for early retirement. For example, a company may offer a package that includes an enhanced pension or up-front lump-sum payments.

Many individuals dream of an early retirement. However, early retirement often requires that the individual manage his or her expenses. This includes either reducing or eliminating debt. Individuals who wish to retire early must also invest wisely, save, and accumulate capital. Early retirees are often super-savers that put away at least one-third of their income. It is also common for early retirees to have no children, own their home, pay off their credit card charges monthly, and have a history of living simply.

When deciding whether to retire early, the individual must weigh different considerations. For example, individuals must consider whether they enjoy going to work every day and whether they can afford to go without their current income and/or job benefits.

Health insurance is important. As Medicare does not provide coverage until an individual turns 65, individuals should consider what health insurance is available to them. By retiring early, a retiree will suddenly find himself or herself with a lot of free time. The individual should consider what he or she would like to do with this time and whether he or she can afford to do these things.

Early retirement can be a double-edged sword. While an individual may love the idea of being free to spend every day engaging in his or her favorite activities, the reality of early retirement may turn out to be completely different. Therefore, before choosing early retirement, individuals have to examine what they do for a living, their relationship with their employer and co-workers, the amount of money they make, and whether they can live without all of those things.

## Related Topics

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- ▶ Financial planning, ▶ Quality of Life, ▶ Retirement, ▶ Social Security

## Suggested Readings

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- Siskos C, Goldwasser J (2004) Get out EARLY. Kiplinger's personal finance. 58(3):72-76
- Wasik J (2000) Retire early and live the life you want now: A ten-step plan for reinventing your retirement. Henry Holt, New York

## Suggested Resources

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- CNNMoney. [http://money.cnn.com/2005/05/03/pf/expert/ask\\_expert/](http://money.cnn.com/2005/05/03/pf/expert/ask_expert/)
- FIRECalc. <http://fireseeker.com/>
- The Retire Early Homepage. <http://www.retireearlyhomepage.com/>
- Social Security Online. <http://www.ssa.gov/planners>

## Earnings Test

*Doug Wood*

As we mature we learn that we cannot predict the future with perfection. As a result of the uncertainty we know there needs to be preparation for the future, no matter what it may bring. When it comes to planning retirement there are many things to be considered in anticipation of the future, including how earnings can affect the benefits one receives from Social Security should you decide to retire early.

The earnings test is used by Social Security to determine how much benefit should be received when one chooses to retire. The rate at which Social Security deducts from the benefits is \$1 for every \$2 of earnings over the allotted amount, if a person chooses to retire early. In addition, there is a lower allocation of exempted earnings before Social Security starts the deductions to the benefits. The benefits are better if one chooses not to retire too early. In fact, if one retires at normal retirement age, there is no limit to how much earnings an individual can have without deductions to their Social Security benefits. Normal retirement ages vary according to the year of birth; typically it is between 65 and 67. The earnings test applies to those who are below the normal retirement age for the entire year in which they receive benefits.

The definition of earnings includes all income other than pensions, annuities, or investment income. The earnings test is applied to earnings from the year they are earned, not the year they are paid out. Retirement benefits from Social Security may need to be recalculated to reflect any earnings one may make during the year they retire.

Assume that an individual wishes to retire and receive Social Security benefits at the age of 63 and normal retirement age is 65. The benefits that the individual will receive will be determined by how much he/she earned in that year. If the individual earned more than the allotted exempt amount, the benefits will be reduced by \$1 for every \$2 earned over the exempt amount. However, if the individual waits until he or she is 65, the individual will have an unlimited amount of earnings available to him or her.

Social Security offers benefit reduction calculations on their website. One merely enters their earnings and age and the calculations are done for free, so that one can get an estimate of the benefits he or she will receive.

The earnings test can help people plan for the future by being able to determine what benefits will be lost with early retirement. The earnings test allows one to do a cost-benefit analysis of early retirement so that you can decide if that is the right choice for you. It is the closest we can get to a crystal ball telling us what the future may hold for us.

### Related Topics:

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➤ Early retirement, ➤ Financial planning, ➤ Retirement, ➤ Social Security

### Suggested Resources

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Social Security's web page for earnings calculations. <http://www.ssa.gov/retire2/retcalc.htm>

## Eating Disorders

*Virginia E. Ayres*

The term “eating disorders” refers to a category of psychiatric illnesses listed in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), that include: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS). Individuals with these disorders exhibit severely disturbed eating behaviors. These disorders occur predominately in women (90%) from industrialized nations where being thin is considered attractive.

The incidence of AN is on the rise. The lifetime prevalence rate for women with AN is 0.6%; the disease is associated with significant morbidity. The mortality rate averages between 5% and 10%, and is frequently due to suicide, starvation, or electrolyte (essential components of blood/body fluid) imbalance. BN has a lifetime prevalence rate of 1–3% for women. Men have one tenth the rate for either disorder. The rate of eating disorders in the older population is unknown. Elderly individuals are not usually assessed for these disorders due to faulty beliefs that they do not occur in this population. Also, when symptoms are observed, they may be attributed to other physical or psychiatric causes.

BN occurs when an individual binges on food and then attempts to get rid of the food and associated weight gain by using a compensatory method. The DSM-IV-TR indicates that binge episodes and the compensatory behavior must occur twice each week for 3 months to be considered a disorder. The binge must occur within a discrete time period (such as 2 hours), significantly more food must be consumed than most would eat in a similar setting, and there must be a lack of control over the eating. As with those with AN, self-evaluation depends significantly on how one feels about the body weight or shape at any one point of time.

There are two subtypes of BN: (1) *purging type*, in which laxatives, diuretics, self-induced vomiting (most common), or enemas are used; and (2) *nonpurging type*, in which excessive exercise or fasting occurs but the methods listed under purging type are not regularly used. Unlike those with AN, individuals with BN are typically at a normal weight, or slightly over or under. The choice of food during a binge episode is frequently sugar-laden with a high caloric content such as cookies, candy, and ice cream. During a binge, food is eaten in secret, and often rapidly until the individual is uncomfortably full. Food may be hidden in various places throughout the living quarters/work area. Triggers for binge eating center around dysphoric or other uncomfortable mood states, relationship stressors, and hunger from dietary restraint. In fact, binge eating commonly begins after dieting, usually in the late adolescent/young adult. Vomiting usually begins after a severe episode of binge eating.

A number of those with BN have a history of AN (25–30%). Some studies suggest that those who develop BN are overweight before the onset, and have higher frequency of personality disorders and impulsive behaviors. Mood disorders, anxiety disorders, and an increased rate of substance abuse or dependence (alcohol and stimulants) are also associated with BN. Studies suggest that the first-degree biological family members of those with BN have a higher incidence of the aforementioned disorders. Due to its relatively recent description in the diagnostic nosology, there is little information regarding the long-term prognosis of those with BN. Most agree that when compared to AN, those with BN have increased rates of partial or full remission.

AN is characterized by refusal to maintain a normal body weight for age and height (less than 85% of expected), marked fear of weight gain, amenorrhea

for three cycles (if woman and of menstruating age), and disturbance in the way weight and shape are perceived. Two types of AN are observed: (1) *restricting type*, in which no binge eating or purging behaviors occur, instead dieting/fasting and excessive exercise are used to lose weight; and (2) *binge eating/purging type*, in which binge eating and purging has regularly occurred. Some with this subtype will purge even after eating tiny portions of food. Those with this subtype are more likely to have a personality disorder diagnosis and exhibit other impulsive behaviors (stealing, promiscuity).

Those with AN deny the seriousness of the low weight. Even as weight decreases, those with AN will continue to experience themselves as fat (or specific body parts as fat, such as their thighs) and will strive to lose even more in an endless cycle. Those who seek treatment will usually do so only after family members or significant others insist, that too, reluctantly. Starvation and the time-consuming behaviors associated with maintaining low weight have interpersonal, psychological, and somatic consequences. Individuals with AN may seek treatment for these associated difficulties, but not to treat the drive for thinness and weight loss. In fact, the ability to lose and maintain the weight loss is perceived as an accomplishment and a testament to self-control.

Excessively monitoring weight, measuring the size of, and looking in the mirror at various parts of the body are a large part of the disorder. There is often poor sexual adjustment. Those with AN may hoard food, collect recipes, and prepare grand feasts for others but do not partake themselves. Depressive illness and obsessive compulsive features may be present during the course of AN due to the effects of starvation itself. Once weight gain is initiated, symptoms of these disorders must be monitored and if they persist, a separate diagnosis may be warranted.

AN rarely occurs before puberty or after 40. When symptoms of AN occur before puberty, there is some evidence of increased comorbidity with other mental disorders. Those who develop the disorder during adolescence may have a better prognosis. Elderly individuals with AN appear to demonstrate the same psychopathological features as their younger counterparts.

The specific cause of AN is unknown. A significant life event or stressor may be associated with the onset of AN. In some cases there is a period of strict dieting (to be attractive or to obtain a body weight needed for a sport, i.e., gymnastics, bodybuilding) which precedes

the onset of AN. This is a similar issue for elderly women who may also experience greater societal pressure to retain physical and sexual attractiveness. There is some evidence that having a first-degree biological relative with AN increases the risk of developing AN and mood disorders. Researchers continue to examine the role of biological processes that may be associated with AN, such as hypothalamic and neurotransmitter function.

The course of AN for any individual can vary since data suggest that roughly 30–43% will experience remission, while 30–36% may go on to experience a waxing and waning course, 20–30% may be chronically ill or go on to develop BN, and 5–10% will die. Those who have an early age of onset and get immediate treatment usually fair better than those who have severe weight loss, vomiting/binging, and chronic symptoms.

EDNOS is the diagnosis given when someone exhibits symptoms of an eating disorder that fall short of the designated number or severity of symptoms needed for AN or BN. For example, the frequency of binge eating might be occurring less frequently than twice a week. Binge eating disorder (BED), currently under investigation, falls in this category. It is characterized by recurrent binge episodes without the regular use of compensatory behaviors. Individuals with BED are usually overweight or more often obese and may have a higher incidence of other mental disorders. This disorder is thought to be quite prevalent with rates around 0.7–4% in community settings and 30% in weight loss programs.

Although there are cases of eating disorders that occur for the first time in late life, it is rare. This infrequency most likely contributes to the lack of recognition of these disorders in the older population. Some suggest that a thorough inquiry targeting these disorders in older individuals, or in men, would uncover greater numbers. When eating disorders are diagnosed in late life, clinical features are similar to younger counterparts as well as the association with depression and obsessive–compulsive disorder. Real or perceived losses, such as the death of a spouse or marriage of a daughter or son, may be precipitating factors in this age group. Some cases of eating disorders in late life represent a relapse of an eating disorder that was present in adolescence, or an exacerbation of eating disorder symptoms that have been present to

some degree for years. Once a history of eating disorders is established, a relapse of symptoms can occur at any time in the life span, particularly when faced with difficult stressors.

Typically, eating disorders which begin in the forties and fifties do not meet the criteria for a specific eating disorder, but instead may represent a mix of eating symptoms (denial of appetite) with other mental (depression, dementia), or physical disorders. Problems with eating in older populations commonly stem from physical and social factors such as impaired taste, social isolation, reduced mobility and finances, and desire to control interpersonal situations by inducing guilt in important significant others.

There are a number of medical issues that may arise in those with eating disorders due to vomiting, starvation, and misuse of laxatives or diuretics, and more rarely, enemas. Although some individuals with eating disorders will show no abnormalities, examinations and laboratory findings may indicate electrolyte disturbances, low blood pressure and fainting, cardiac arrhythmias and failure, anemia and low white cell counts, osteoporosis, parotid (salivary) gland enlargement, and dental problems. For individuals with self-induced vomiting, significant lethal risks include esophageal rupture, gastric dilatation, sudden cardiac death, and cardiomyopathy (disease of the heart muscle) secondary to ipecac abuse. The elderly patient is more vulnerable to these potentially severe and life-threatening effects.

Methods used to treat eating disorders include psychotherapy, medication, and hospitalization. There are no studies that specifically examine treatments for older adults; consequently the same treatment options are available to young and old alike. Determining the appropriate course for each individual is key. For those with AN, a combination of treatments is generally recommended. Hospitalization may be required to increase weight. Cognitive and behavioral methods may be used to target the maladaptive thoughts and behaviors associated with the eating disorder. For those living with family members, therapy involving all members may be helpful. Medications such as chlorpromazine (Thorazine), cyproheptadine, fluoxetine (Prozac), and clomipramine (Anafranil) have been prescribed, but none have been studied sufficiently to demonstrate a clear benefit in the treatment of AN and the frequently associated mood symptoms. More study

is needed to determine the efficacy of these and other medications in the treatment of AN. Fluoxetine (Prozac) has demonstrated some benefit in relapse prevention when given after weight has been restored.

For those with BN, antidepressant medications such as fluoxetine (Prozac), sertraline (Zoloft), and imipramine combined with cognitive behavioral treatment (CBT) seem to be the most effective. There is some evidence that interpersonal psychotherapy (IPT), which focuses on current relationships, not the eating and weight issues themselves, is an effective treatment. When the two therapies were compared, those treated with CBT improved more rapidly, but by one year no differences were found between those treated with CBT or IPT.

## Related Topics

[Cognitive behavioral therapy](#), 
 [Depression](#), 
 [Emotions](#), 
 [Obsessive compulsive disorder](#), 
 [Psychotherapy](#), 
 [Stress](#)

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## Suggested Resources

American Association for Geriatric psychiatry. [www.aagppa.org](http://www.aagppa.org)

# Edema

John A. Ternay · Nanette K. Wenger

Sixty percent of the lean body mass is water. The health of body tissues depends on keeping this large volume of fluid in normal balance. Body water is contained in two main locations. Some body water is in the intravascular compartment, that is, in the blood vessels. The majority of body fluid is extravascular. Extravascular fluid can be inside the cells or in the space surrounding the cells, called the interstitium. One third of the body's water is in this interstitial space. The vascular compartment is separated from the interstitial compartment by a thin layer of cells at the level of the capillary. Under normal conditions a small amount of fluid leaks into the interstitial space and is removed by the lymphatic system. Accumulation of an abnormal amount of interstitial fluid leads to swelling, termed edema. To understand causes of edema, understanding the fluid dynamics controlling its formation is needed. Hydrostatic pressure is pressure due to the hydraulic force of the fluid on the blood vessel wall. This pressure drives fluid out of the vascular space, into the interstitium. Oncotic pressure exerts the opposite force, keeping fluid in the vascular space. Oncotic pressure comes mainly from the concentration of protein in the plasma. These same forces are present in the interstitium, albeit exerting their forces in the opposite direction. These forces are collectively known as Starling's forces. The main mechanisms for formation of edema are an increase in hydrostatic pressure or a decrease in oncotic pressure in the vasculature, increased permeability of the vessel wall, or obstruction to lymphatic flow.

Edema is the abnormal collection of interstitial fluid. Edema has different clinical presentations and terminology depending on the location where it accumulates. The most common type is peripheral edema that accumulates in the superficial soft tissues of the trunk and extremities. Because of gravity, this type of edema tends to collect in the most dependent portion of the body (feet and legs) termed dependent edema. In a person confined to bed, the most dependent location may be the sacral area (lower back). Pressing on an edematous area often leaves an imprint of the fingertip, called pitting edema. In nonpitting edema the

fingertip leaves no impression. This kind of edema is much less common, and is seen in conditions such as hypothyroidism. Edema can accumulate in the lungs, called pulmonary edema. Clinically, this presents with shortness of breath, cough, and a feeling of smothering. Edema can occur in the brain, termed cerebral edema. This presents with neurologic complaints, often with coma. Severe generalized edema is termed anasarca. Edema is a sign of an underlying medical problem, and is usually not a diagnosis on its own.

The potential causes of edema encompass local and systemic diseases. The following paragraphs discuss the more common etiologies of edema in the elderly. For a full list of etiologies of edema, review the references at the end of this chapter.

Congestive heart failure is one of the most common causes of edema. The basic problem is failure of the heart to effectively pump the blood forward through the circulatory system. This leads to an increase in hydrostatic pressure in the capillaries (venous hypertension) and egress of fluid into the interstitium. Once the rate of accumulation exceeds the ability of the lymphatic system to drain the fluid, edema forms. In left ventricular failure (failure of left-side heart muscle) this occurs in the lungs and in right ventricular failure (failure of right side heart muscle) it occurs in the periphery. Additionally, as blood flow to the kidneys is reduced, neurohormonal changes occur causing the body to retain sodium, thus increasing total body water, leading to worsening of edema and of symptoms of a heart failure. Usually, this failure to pump blood is due to weakening of the heart muscle (systolic heart failure). A similar clinical picture occurs when pressure builds up because of the inability of the heart to fill properly (diastolic heart failure). As the fluid cannot enter the heart to be pumped, it backs up, hydrostatic pressure increases, and edema forms. Most commonly this is seen in elderly women with a stiff left ventricle from hypertrophy (enlargement) caused by long standing hypertension. Less commonly this is caused by constrictive pericarditis (inflammation of tissue around the heart) and restrictive cardiomyopathy (cardio muscle disease). Restrictive cardiomyopathy is seen in elderly patients with amyloid heart disease. Constrictive pericarditis is a condition in which filling of the heart is impaired as it is encased in an unusually thick and noncompliant outer layer, the pericardium. Multiple factors in the elderly can lead to this condition, with prior open-heart surgery and radiation therapy for malignancy being the more common. The

successful treatment of heart failure requires that both the poor pump function and sodium retention be addressed.

Chronic venous insufficiency is another common cause of edema. Typically it is caused by incompetence of the valves in the venous system of the legs, leading to reflux of blood into the leg tissues. The resultant increase in venous pressure leads to the formation of edema. The dysfunction of the leg's venous valves is most commonly caused by prior deep venous thrombosis (blood clot in the veins of the legs.). This type of edema is more common in elderly patients, as they more commonly have a history of precipitating conditions. As opposed to heart failure, venous insufficiency edema is asymmetric, forming in the region drained by the damaged veins. If it becomes a chronic problem, affected areas can show varicose veins, skin pigmentation, and ulceration. A similar clinical picture can occur with normal veins but extrinsic compression of the veins by a mass, such as malignancy or uterine fibroids.

Hypoproteinemia, low blood protein, leads to edema because the reduced oncotic pressure in the vasculature favors escape of fluid into the interstitium. Hypoproteinemia in the elderly occurs for a variety of reasons. Severe nutritional deficiency occurs in many disease states. It may be a consequence of chronic illness, or may be secondary to the inability to eat because of oral, dental, or gastrointestinal disease. This can also occur in frail elderly people who lack assistance needed to prepare meals. Severe liver disease with decreased protein synthesis (cirrhosis), nephrotic syndrome (protein escaping in the urine), and protein-losing enteropathy (protein escaping into the intestine) are other common etiologies of hypoproteinemia.

Cirrhosis is seen in the elderly with long-standing liver disease. Infections such as hepatitis B and C, chronic biliary obstruction, alcohol abuse, and hepatotoxic medications can cause severe reversible or irreversible liver damage. Regardless of the underlying reason for liver disease, cirrhosis results in edema by many mechanisms. As stated above, impaired protein synthesis leads to decreased plasma oncotic pressure. Portal hypertension (elevated pressure in the hepatic vessels) leads to venous hypertension with a rise in hydrostatic pressure. Systemic arterial vasodilation also occurs, causing a decrease in the mean arterial pressure. The resultant kidney hypoperfusion leads to retention of sodium and water as previously described. The end result is accumulation of fluid outside the

vasculature. It accumulates in both the peritoneal (abdominal) cavity (ascites) and in the periphery (edema).

Edema can also occur as a result of obstruction of lymphatic drainage of the interstitial space. This type of edema is termed lymphedema. It may be primary (no other reason for the impaired lymphatic drainage) or secondary. Primary edema is typically a disease of middle-aged women. Secondary lymphedema is more common in the elderly. It may be due to prior radiation therapy, lymph node surgery, or infection (lymphangitis). Elephantiasis is lymphatic obstruction caused by a parasitic infection, and is a common cause of lymphedema outside the United States. The clinical characteristics of lymphedema differ somewhat from that in the causes of edema described above. The edema tends to be less pitting, and is associated with thickening of the skin and its folds. In severe cases this is so dramatic that the skin and its pores resemble the skin of an orange (peau d'orange). Long-standing severe lymphedema can lead to limb enlargement that can become severe enough to interfere with daily function.

Medications are a common cause of edema, especially in the elderly, who are often on multiple prescription medications. Common offending agents include calcium channel blockers, diazoxide, minoxidil, thiazolidinediones, estrogens, and nonsteroidal anti-inflammatory agents. A thorough medication history should be taken in any elderly patient presenting with edema.

Less common causes of edema include severe burns, allergic reactions, myxedema, and the capillary leak syndrome. Increased capillary permeability is thought to be responsible for edema formation in these conditions.

Treatment of edema targets both the underlying medical condition and the resultant sodium and water retention. Dietary restriction of sodium, and sometimes fluid is required. Diuretics increase the body's excretion of sodium. This lowers the total body water and reduces edema. Compression stockings increase the interstitial pressure in the legs, decreasing the rate of edema formation. This is particularly useful in edema caused by venous insufficiency. Other simple behavioral modifications such as keeping the legs elevated while sitting can reduce edema of any cause. Further management of edema is targeted at the underlying cause. Management of heart failure, kidney failure, and cirrhosis is complex, but aggressive

management is essential to maintain successful long-term control of edema.

Management of any disease in the elderly is complex, and this holds true for edema as well. Several concepts are important when formulating a treatment plan for the elderly. Elderly patients tend to have multiple medical problems (comorbidities) that must be addressed. In the management of edema these other diseases pose many problems: identifying the etiology of the edema, contraindications to medical or surgical treatments, and limited life expectancy being the more common. The elderly are more prone to adverse reactions to medications. This is particularly true in the use of diuretics to treat edema. Elderly patients are more prone to develop dehydration and its adverse consequences. Dehydration can present as weakness, falls, or altered mental status. The elderly are also more prone to adverse effects of diuretics on electrolyte levels, and are prone to develop hypokalemia (low serum potassium). When starting diuretics it is important to start with a low dose, titrate slowly, and use the lowest effective dose. This "start low and go slow" principle applies to any medication prescribed to the elderly. As people age they tend to develop dysfunction in multiple organ systems. This makes diagnosing the cause of the edema more difficult, and in turn complicates management. However, edema can cause significant morbidity in the elderly and therefore, despite these pitfalls, usually warrants aggressive treatment. In the frail, where mobility is limited, edema can worsen this problem. It also increases the risk of pressure ulcers (skin breakdown in a localized area) a major problem in the elderly population.

In summary, edema in the elderly is a common problem caused by abnormal fluid balance. The causes are many, with heart, liver, and kidney disease being common causes. Treatment is targeted at reducing total body water, as well as treating the underlying illness or illnesses. Elderly are at the greatest risk of complications of therapy. However, they also derive the greatest benefit.

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## Education

*Gail E. Souare*

Educational attainment influences socioeconomic status, which in turn plays a role in well-being at older ages. Education might improve important cognitive skills including literacy, enhanced decision making, and analytical skills, which allow individuals to be more successful in managing their health problems, in interacting with the health care system, or in preventing future health problems. Higher levels of education lead to higher income, which allows the purchase of more health insurance, better housing, and other goods and services. Some studies have also shown that education might lead to greater optimism about the future, self-efficacy or sense of control, which might alter health behaviors, adherence to medical treatments, or ability to self-manage chronic illnesses.

According to US Census Reports, in 2003, 72% of the older population had graduated high school, and 17% had at least a bachelor's degree. Older men and women were equally likely to have graduated from high school, although older men attained at least a bachelor's degree more often than older women (23% compared with 13%). The gender gap in completion of a college education will narrow in the future because men and women in younger cohorts are earning college degrees at roughly the same rate.

Despite the overall increase in educational attainment among older Americans, substantial educational differences exist among racial and ethnic groups. In 2003, 76% of non-Hispanic whites and 70% of Asians aged 65 and above had completed high school. In contrast, 52% of older blacks and 36% of older

Hispanics had completed high school. Older Asians had the highest proportion with at least a bachelor's degree (29%). Almost 20% of older non-Hispanic whites had this level of education, while only 10% and 6%, respectively, of older blacks and Hispanics had a bachelor's degree.

The National Institutes of Health reports associations between education and health across a broad range of illnesses, including coronary heart disease, many types of cancer, Alzheimer's disease, some mental illnesses, diabetes, and alcoholism. In addition, many important health risk factors for disease, such as use of cigarettes, have been linked to education levels. For most diseases, segments of the population with lower levels of education have higher risks of these diseases and access fewer preventive services.

Education appears to be a protective factor. In some studies of clinical treatments, those with lower levels of educational attainment demonstrated poorer outcomes. In studies of chronic diseases such as HIV or diabetes, the effectiveness of self-management and adherence to medical treatment appears related to educational attainment. Unfortunately, few studies have been conducted on the effects of educational attainment and aging.

One study including 1,277 older adults aged 55 and above, concluded that higher education levels appear to increase the likelihood of being happy, healthy, and vital in later years. Positive psychological states appear to have both a promotion function (for vitality) and protective function (against health symptoms).

In a study of psychosocial, behavioral, and biological factors, and educational attainment conducted of older men and women, aged 70–79, associations among education and behavioral (e.g., cigarette smoking, physical activity), biological (e.g., pulmonary function, serum cholesterol), psychological (e.g., self-efficacy, anxiety), and social (e.g., networks, support) factors were examined. The analysis indicated that low levels of education were associated with poorer psychological function (efficacy, happiness), less optimal health behaviors (increased tobacco consumption and decreased levels of physical activity), poorer biological conditions (decreased pulmonary function, increased body mass index, and waist to hip ratio), and larger social networks (increased number of contacts, decreased negative support). On the other hand, several factors (alcohol consumption, HDL cholesterol) were not found to be related to educational attainment.



## Related Topics

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▶ [Adult education](#), ▶ [Health promotion](#), ▶ [Socioeconomic status](#)

## Suggested Readings

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# Elder Abuse and Neglect

*Gerald J. Jogerst*

Elder mistreatment, which includes both abuse and neglect, is a significant public health problem encompassing a variety of activities perpetrated on older adults by others. The classification of elder mistreatment has been based on abuse type (e.g., physical, verbal, financial); motive (e.g., intentional versus unintentional neglect); relationship to perpetrator (e.g., paid caregiver versus family member); and location (e.g., community versus nursing home). Although there is no universally accepted definition of elder mistreatment, many state agencies that investigate cases of abuse have adopted or modified the Older Americans Act of 1975 definition, “The willful infliction of pain, injury or mental anguish.”

Mistreatment of older adults is a problem of unknown magnitude with estimates that 1–10% of the elderly population is affected annually. Perhaps the best available estimate of elder abuse is from the National Center on Elder Abuse Study, which reports that nearly 550,000 adults above 60 were the victims of abuse in domestic settings in 1996. Only about 20% of such cases are reported and substantiated by Adult Protective Services.

One of the societal responses to the growing awareness of elder mistreatment is a creation of state mandatory reporting laws that name health care providers

and other professionals as mandatory reporters. Although the statutes were instituted to increase awareness and decrease occurrence of elder abuse there is no convincing evidence to support their effectiveness. States with mandatory reporting laws do have higher domestic elder abuse investigation rates but this finding is difficult to interpret not knowing the underlying community prevalence of the actual elder mistreatment.

The issue of elder mistreatment is especially significant for health care workers since they are in a unique position to detect abuse and neglect first hand. Physicians in family practice, internal medicine, and psychiatry have the opportunity to develop well-established relationships with long-term patients that may be conducive to discovering more subtle cases of abuse in early stages of neglect, the most common form of elder mistreatment. In Michigan, physicians accounted for only 2% of total state elder abuse reports to the state’s protective agency. Family physicians in Iowa who ask their patients direct questions on elder abuse are more likely to see and report elder abuse cases, yet only 54% of the 202 physicians who claim to have seen a suspected case of abuse reported all their cases to the state’s investigative agency.

Physicians give many reasons for not reporting cases of elder abuse. These include fear that the report would make the situation worse, lack of awareness of state reporting laws, preference to avoid legal involvement, and patient/physician confidentiality issues. It must be remembered, however, that like other forms of domestic violence, the situation tends to escalate if interventions are not initiated and that the obligation to report elder supersedes the privilege of confidential communications between doctors and patients.

## Themes and Risk Factors

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Although there are hypotheses of stress caregiver, learned violence, psychopathology, and dependence to explain the cause of elder mistreatment, it is widely recognized that a single theory cannot account for all situations. The vulnerability of the older person to abuse is related to their dependence on the abuser, history of family abuse, being without social networks, being older than 75, psychopathology of the perpetrator that predisposes to abusive behaviors, dependence of the abuser on the elder, and abuser’s use of drugs and alcohol. Elder abuse risk factors are based on

epidemiologic studies, and subsume many different situations including physical abuse from adult children, paid caregivers neglecting their dependent clients, and elderly couples who are involved in a lifetime spousal abuse. Clinicians therefore cannot rely on these average risk factors in making clinical decisions. When there is clinical suspicion of abuse, fewer or absent risk factors should not lead the clinician to lower his or her guard. Elder mistreatment crosses all socioeconomic and ethnic borders and a high index of suspicion is paramount in making this diagnosis.

## Identifying Elder Mistreatment

Health workers providing care for an elderly person should screen for abuse. Interviews with elderly patients suspected of being abused should occur away from the suspected abuser. Direct questions should be asked such as, “Has anyone at home ever hurt you?” “Has anyone ever taken anything of yours without asking?” or “Are you afraid of anyone at home?” A positive response to such questions should be followed up with inquiries about where and when maltreatment occurred and by whom. If abuse is suspected, the elder person’s safety is the first consideration. It must be determined whether the person is in immediate danger and if it is safe for the older person to return home. When there are safety concerns the person needs to be removed from the environment and in some cases short-term hospitalization or placement in a nursing home is the only alternative. If a potential victim returns home, it should be determined whether there are barriers to further assessment.

There are many potential interventions for components of the elder abuse related to the context in which it occurs. Abuse related to stress from caring for the impaired family member may be improved by respite services, treatment of depression, and psychotherapy for the carer. Violence related to substance or alcohol misuse may respond to drug and alcohol misuse rehabilitation programs. Abuse in the context of long-standing spousal violence may be improved with marital counseling, support groups, orders of protection, or victim advocacy. Financial exploitation by a family member may require the establishment of a guardianship and transfer of legal authority.

Mandatory reporting by professionals working with elderly of suspected mistreatment now exists for most states. It is imperative that persons working with

the elderly are familiar with local adult protective service agencies, community social service departments, police and sheriff departments that can investigate, and intervene in cases of suspected abuse. The National Center on Elder Abuse is a good source to learn about state units of aging and elder protective agencies.

## Related Topics

- ▶ Crime, ▶ Family violence, ▶ Financial abuse,
- ▶ Guardianship, ▶ Intimate partner violence, ▶ Rape,
- ▶ Stress

## Suggested Readings

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- Gordon RM, Brill D (Mar-Jun 2001) The abuse and neglect of the elderly. *Int J Law Psychiatry* 24(2–3):183–197
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- National Center on Elder Abuse (1998) The national elder abuse incidence study. Department of Health and Human Services, Washington, DC
- Oswald RA, Jogerst GJ, Daly JM, Bentler SE (2004) Iowa family physician’s reporting of elder abuse. *J Elder Abuse Negl* 16(2):75–88

## Suggested Resources

- Department of Health & Human Services, Administration on Aging. Elder rights and resources (Oct 20, 2005). [http://www.aoa.gov/eldfam/Elder\\_Rights/Elder\\_Abuse/Elder\\_Abuse.asp](http://www.aoa.gov/eldfam/Elder_Rights/Elder_Abuse/Elder_Abuse.asp)
- National Center on Elder Abuse (NCEA). The source of information and assistance on elder abuse (Oct 20, 2005). <http://www.elderabusecenter.org/>

## Elderhostel

*Tambra K. Cain*

A hostel is a supervised, inexpensive lodging place for travelers, more often referred to as an inn or a hotel. An elderhostel is, in the most literal translation, a

hostel directed towards our aging community. However, “elderhostel” has come to mean much more. As our aging community grows and comes to live longer, it is becoming a more active participant in the recreation arena. According to the 2000 Federal census, there are more than 121 million Americans aged 55 and above. This represents approximately 43% of the American population.

Elderhostels have become much more than just a vacation getaway. They are now structured, recreational events often with educational value. There are elderhostel programs in each state of the United States and throughout Canada, as well as many international programs. Typically these programs are geared towards adults aged 55 and above. Elderhostel programs are designed to blend senior adults with younger participants, so as to bridge the generational gap.

These programs typically last for several days and include meals, lodging, and planned recreation. The cost of an elderhostel program can vary widely, some being quite affordable and others reaching into the thousands of dollars per person. A few programs even offer scholarships to low-income seniors in order to encourage participation among low-income seniors.

## Related Topics

▶ Travel

## Suggested Readings

Dada L (1994) *Elderhosteling, United States: an elderhostel how-to guide*. Eldertime Publications, Ferndale, CA

Elderhostel (2001) *Elderhostel International Catalog, Issue 2*. Boston MA

Kerrigan D (1992) *Elder odyssey: an elderhostel sampler guidebook*. Market Square, Greenville, SC

## Suggested Resources

Website for Elderhostel. and Elderhostel Institute Network. <http://www.elderhostel.org/welcome/home.asp>, November 2005

The 2000 US Census. <http://www.census.gov/prod/cen2000/phc-1-1-pt1.pdf>, November 2005

# Electrocardiogram

*Sudeshna Banerjee*

The nineteenth century saw the birth of the electrocardiogram (ECG). The first to approach the heart from an electrical standpoint was Augustus Waller in London. The breakthrough in the development of the tool, however, came in 1901 when Willem Einthoven, working in the Netherlands, developed a more sensitive electrometer. He went on to describe the electrocardiographic features of a number of cardiovascular disorders and was awarded the 1924 Nobel Prize in Medicine for his discovery.

Electrical activity is created by ‘pacemaker’ cells present in the atria or upper chambers of the heart. This electrical activity stimulates cardiac contraction—the pumping activity of the heart. The pathway originates in the sinus node, located in the right atrium, travels through the atrioventricular (AV) node, then follows the septum (dividing the right and left chambers of the heart) where it splits into a right and left bundle delivering the stimulus to the ventricles. The ventricles, or lower chambers of the heart, are muscular structures that pump blood to the lungs and the rest of the body.

The spread of the cardiac impulse gives rise to electrical deflections that can be traced on paper and are the basis for ECG. The conventional ECG is composed of 12 leads (▶ *Figure 1*) which trace the electrical activity as the heart undergoes depolarization and repolarization. Each lead provides a discrete view of the heart and aids in the anatomical localization of disturbances.

The electrodes are placed on the right arm, left arm, left leg, and along the chest wall. Leads II, III, and aVF give a view of the bottom of the heart, leads V1–V4 demonstrate a frontal view, and leads V5 and V6 along with lead I and aVL demonstrate a lateral view. These views correlate with the distribution of ‘coronary’ arteries supplying these areas of the heart and aid in diagnosis and localization when damage occurs.

The ECG is traced at a rate of 25mm/second on paper that is divided into specially measured small and large boxes. The deflections are labeled P, Q, R, S, and T (▶ *Figure 2*). Although it appears simple, this tracing harbors much information regarding the size, shape, and activity of the heart muscle.

Figure 1

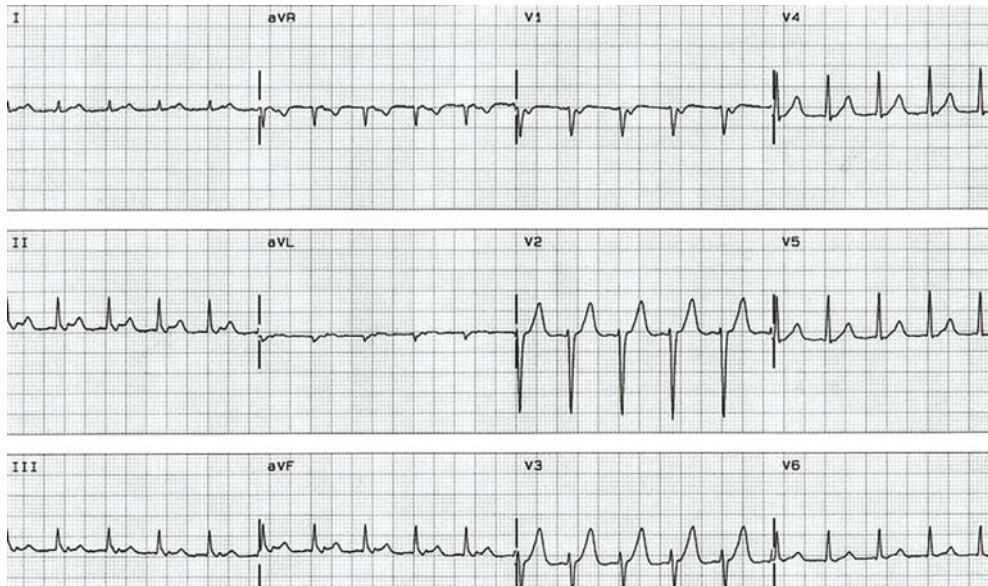
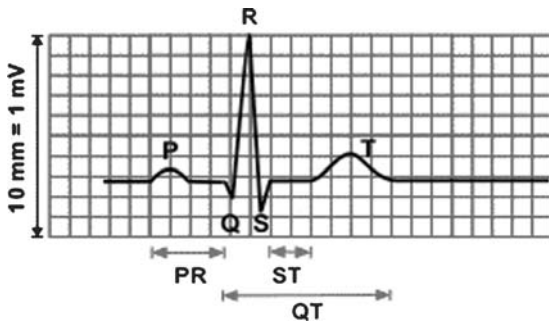


Figure 2



The normal P wave is a result of electrical activity spreading across the atria. The shape of the P wave can indicate whether the rhythm is being set by the sinus node or an abnormal pacemaker. The size of the P wave can indicate enlargement of either atrium.

The PR interval represents the time taken by the impulse to travel from the atria to the ventricles. When prolonged, it indicates a disruption in the conduction pathway, referred to as heart block. The QRS complex is a result of depolarization of the ventricular muscle. The Q wave is the initial negative deflection, which if deep and wide indicates a myocardial infarction (MI).

Ventricular repolarization results in the formation of the T wave. Abnormalities of the T wave may

indicate myocardial ischemia (decreased blood flow to the heart muscle), MI (death of muscle cells), or enlargement of the ventricle (hypertrophy).

The ST segment comprises the section between the end of the QRS complex and the beginning of the T wave. A displacement upwards indicates an MI while a downward displacement is a sign of acute ischemia. The distribution of the affected leads demonstrates which coronary arteries are affected.

The ECG is a very important tool, aiding in the diagnosis of heart attacks, arrhythmias, heart block, and hypertrophy. It is inexpensive and may be quickly obtained when completed by an experienced individual. The most common use of the ECG is in the evaluation of chest pain. Ischemia and infarction can be indicated by changes in the ECG, but this test is not sufficient to diagnose these conditions. In conjunction with history, physical exam, and laboratory values, however, the ECG is very useful in diagnosis. It is used in preoperative risk assessment as well. The ECG is readily available, making it one of the first diagnostic tests performed in patients. If abnormalities are found, patients are referred for further evaluation including echocardiogram (ultrasound of the heart), stress testing, and cardiac catheterization (imaging of the coronary arteries using dye). Conversely, a normal ECG may sometimes preclude more invasive procedures.

Abnormalities in the conduction pathway, including arrhythmias, are also evaluated by the ECG. Common abnormalities include atrial fibrillation, heart block, and ventricular tachycardia (fast heart rate). These conditions can be due to genetic abnormalities, salt disturbances (potassium, magnesium, and calcium are the most common culprits) or ischemia. The 12-lead ECG can locate where in the conduction pathway these disturbances originate. Proper identification of these disturbances is necessary for appropriate treatment which consists of pacemakers (set a controlled heart rate), internal defibrillators (shock abnormal rhythms), radiofrequency ablation (destroy abnormal pacemakers), and antiarrhythmic medications.

## Related Topics

➤ [Cardiovascular disease](#), ➤ [Coronary heart disease](#)

## Suggested Readings

- Andreoli T, Carpenter C, Bennett J, Plum F (eds) Cecil essentials of medicine, 4th ed. Saunders, Philadelphia, PA, pp 20–27
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# Electroencephalogram

*Adriana S. Tanner*

Electroencephalography is the branch of neurophysiology that measures the electrical activity of the brain. The electroencephalographic signals are generated by the cerebral cortex where the summation of synaptic activity of millions of neurons results in voltage changes at the scalp surface. These signals are captured by a number of strategically placed electrodes, small metal discs that are usually glued to the scalp. This signal is amplified and generates inflections or

waves that are seen in graphical form on a computer screen or paper as an electroencephalogram or EEG (➤ [Figure 1](#)).

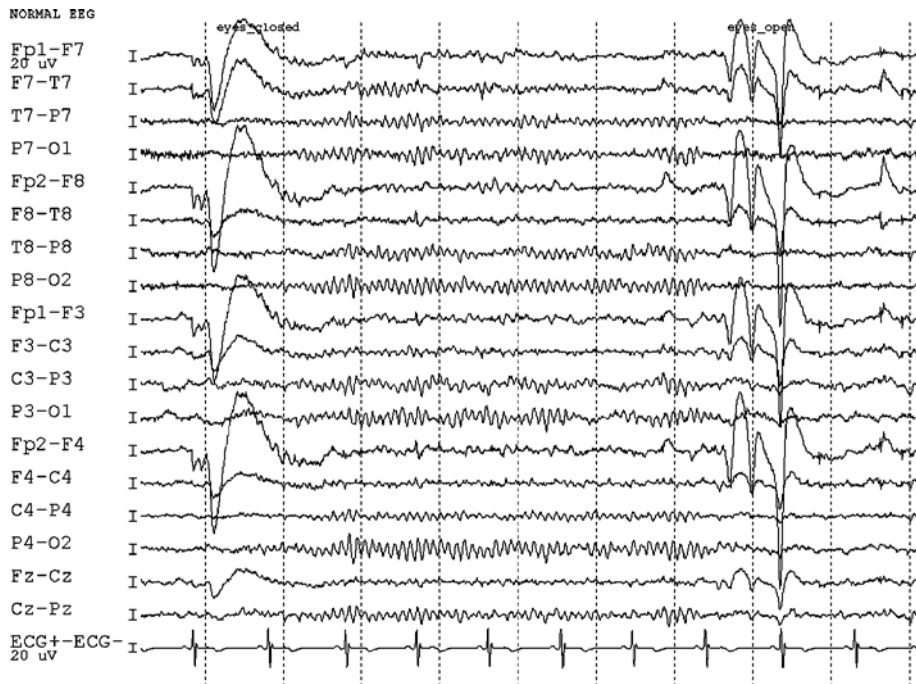
Electroencephalograms may be performed either on outpatients or while hospitalized. The test requires cooperation of the conscious patient for optimal recording and interpretation. Motion, muscle contraction, along with a multitude of external environmental changes influence the recordings and make interpretation difficult.

Other modalities of EEG such as ambulatory and video-electroencephalography are also clinically useful. Ambulatory monitoring is often used to detect infrequent events reported by patients to occur only during their daily routine. Video-electroencephalography is commonly used in an inpatient setting to record bursts or paroxysms of behavior with camera and sound, and correlate with electroencephalographic signals. Both modalities are useful in documenting and studying seizures as well as other paroxysmal phenomena not well understood or diagnosed, and in patients being considered for epilepsy surgery, in which the area of seizure origination needs to be precisely mapped.

In clinical practice, the EEG is interpreted by a neurologist who may often have additional training or have completed a specialty fellowship in this area. The test is best used to address a particular question in a given condition, rather than as a method to screen for certain diseases. Clinical uses of EEG include evaluating epilepsy, altered states of consciousness, focal cerebral lesions, various encephalopathies, central nervous system infectious diseases, dementia, and brain death. Many of the findings seen in EEG are nonspecific, but some are highly suggestive of specific entities.

EEG is probably the most useful test in the diagnosis of epilepsy. Epileptiform abnormalities are abnormal waves usually termed sharp waves or spikes and have a high correlation with epilepsy. Evidence shows that only approximately 2% of the general population has these abnormal waves, whereas as many as 90% of patients with epilepsy will display them. Many factors influence the appearance of epileptiform abnormalities, and because they are intermittent phenomena, they may not be seen even in someone with confirmed epilepsy. Large studies have demonstrated that an initial EEG will detect epileptiform abnormalities in 29–55% of patients with epilepsy. Repeated EEGs over time will demonstrate

■ Figure 1



epileptiform abnormalities in 90% of patients by the fourth EEG.

In addition to distinguishing epileptiform abnormalities, EEG will sometimes identify specific electroclinical syndromes in uncommon or rare neurological conditions such as findings associated with infantile spasms in the West syndrome; 3Hz spike-and-waves in absence or *petit mal* epilepsy; and slow spike waves associated with Lennox-Gastaut syndrome.

EEG has an important role in the evaluation of patients with altered level of consciousness as it complements the clinical examination and imaging findings. EEG may help address issues such as the extent of the process as to whether it is localized or not, diffuse, the occurrence of seizures without physical manifestation (nonconvulsive seizures or status epilepticus), and prognosis. These same principles apply for the use of EEG in dementing process. In certain central nervous system infections such as herpes encephalitis, early EEG is important in diagnosis as the findings are very characteristic.

In the case of brain death, while its diagnosis is based on clinical criteria, studies have shown that loss of cerebral electrical activity, also known as

*electrocerebral silence*, is rarely associated with recovery of neurological function.

EEGs have a wide variety of clinic uses from helping assess and diagnose clinical conditions to assisting in determining prognosis in others.

## Related Topics

► [Epilepsy](#)

## Suggested Readings

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- Ebersole JS, Pedley TA (eds) (2003) Current practice of clinical electroencephalography. Lippincott Williams & Wilkins, Philadelphia, PA
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# Emotions

*Heather M. Smith*

As a result of their complexity, emotions are difficult to define and characterize, and many definitions have been proposed. In general, the term “emotion” refers to a class of subjective feelings experienced in response to objects or events that hold significance for an individual. Typically, emotions possess a directionality or valence; that is, emotions are categorized as being positive (e.g., happiness, joy) or negative (e.g., sadness, anger).

Emotional complexity refers to the ability to distinguish between pleasant and unpleasant feelings. Studies suggest that positive emotions promote resistance to disease, and the experience of increased emotional complexity has been linked to greater resilience and improved health behaviors and outcomes. In turn, negative emotions, including sadness and frustration, and lower levels of emotional complexity are associated with poorer health-related variables, including binge eating, alcohol abuse, and increased stress. An individual’s ability to regulate his or her emotions, that is, to maintain positive emotions and decrease negative emotions, also has been linked to health status and various disease states, including psychiatric disorders such as anxiety and depression.

Recently, increased attention has been directed toward identifying areas of the brain involved in the experience of emotions. Research indicates that brain areas involved in memory for emotional information and emotional processing include the amygdala, prefrontal cortex, and medial temporal lobes.

## Emotions Across the Life Span

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Historically, it was assumed that emotional functioning diminished with age, along with cognitive and physical abilities. However, research over the past decade has revealed that emotional functioning remains relatively intact throughout the aging process. In fact, studies have identified the “paradox of aging”—despite experiencing physical decline and social losses, older adults demonstrate preserved and, in some instances, improved emotional functioning with age.

For instance, the results of empirical studies indicate that basic emotional experiences are similar across

the life span. Research suggests that young and old adults express emotions in a similar manner, and the ability to express emotions does not appear to diminish with age. Older adults report equally as positive, if not more positive, emotional experiences when compared to younger individuals. In addition, most studies have found that older adults (with the possible exception of the oldest old) experience negative emotions less frequently than their younger counterparts, and they may be more likely to experience positive and negative emotions simultaneously, suggesting an increase in the complexity of emotional experiences with age.

Older adults are more susceptible to medical conditions, including dementia, cerebral vascular accident (stroke), and Parkinson’s disease, that can interfere with emotional functioning and may be associated with reduced emotional expression; increased depression, anxiety, irritability and emotional ability; and poor emotion regulation. However, self-report studies indicate that older adults report an enhanced ability to regulate their emotions when compared to younger adults. In addition, observational research suggests that older adults may be particularly adept at regulating emotions relative to interpersonal relationships, including those with romantic partners. As such, older individuals tend to resolve conflicts in their relationships with less negativity and more affection than younger adults. With the exception of cognitive disorders (e.g., dementia, delirium), older adults also have lower rates of mental illness, including depression, anxiety, and other conditions involving disturbed emotions, than any other age group. Research also indicates that older adults experience the same or even greater levels of life satisfaction than younger individuals. Thus, despite encountering a number of losses (e.g., decline in physical health, deaths of friends and relatives), older adults do not develop a disproportionate rate of mental disorders or dissatisfaction with life, which supports the finding of age-related improvements in emotional regulation.

Compared to the observed age-related decline in free recall of nonemotional information, memory for emotional material appears to be relatively well-preserved with age. In fact, older adults may show a preference for recall of emotional information. In one study of adults ranging from 20 to 83 years, recall of emotional information increased with each successive age group. Consistent with research suggesting a decline in the experience of negative emotions with

age, recent studies have revealed that older adults are less likely to recall negative emotional material and more likely to recall positive emotional stimuli than younger adults, a phenomenon that has been termed the positivity effect.

One difference in emotional functioning across the life span is a decrease in the degree of autonomic or physiological arousal, in particular cardiovascular response, associated with emotional experiences for older adults relative to younger adults. For instance, when induced to experience fear or anger, older adults display less elevation in heart rate than younger individuals. The observed decrease in physiological arousal with age does not appear to be accompanied by age differences in the subjective intensity of emotional experiences, as young and old adults report similar levels of emotional intensity. It is unclear whether current research findings represent a general age-related decrease in autonomic activity or a reduction in emotional arousal specifically.

Research suggests that older adults may be less accurate in identifying emotions represented in the facial expressions of others. More specifically, studies indicate that older adults are less able to identify and discriminate between negative emotions, including sadness and anger, than are younger individuals. Other investigations suggest that older individuals may be more accurate in identifying the emotional expressions of others in their own age group than those of younger people.

Research investigating the role of brain activation in emotional functioning across the life span is still mounting, but some studies indicate that older adults experience less activation of the amygdala while viewing emotional images relative to younger adults. Other researchers suggest that the tendency for older adults to focus on, and therefore remember, emotional information is a function of decreased frontal lobe activity with age, which results in increased distractibility and an inability to inhibit task-irrelevant (e.g., emotional) material.

Researchers continue to seek explanations for the observed overall preservation of emotional functioning throughout the aging process. One school of thought is socioemotional selectivity theory, which proposes that people prioritize emotional or knowledge-seeking goals depending on their perception of time as being limited or expansive, respectively. Because time decreases with age, emotional goals and aspects of life become increasingly important throughout adulthood. Research supports the theory, as studies indicate

that older adults are more prone to take account of emotional information when making decisions, and emotions occupy a more central role in mental processing as individuals near end-of-life, regardless of age. The narrowing of one's social circle in later life may reflect an older individual's desire to select social relationships that promote the optimization of his or her emotional health. Studies support the notion that greater perceived social support is associated with increased experience of positive emotions in later life.

A limitation of the current body of research is that most studies employ a cross-sectional design, and therefore the role of cohort or generational influences is uncertain. However, the available research clearly indicates that the aging process is not inherently one of emotional despair and decline, but rather a time of resilience, fulfillment, and emotional health and stability.

## Related Topics

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▶ Anxiety disorders, ▶ Coping, ▶ Dementia, ▶ Depression, ▶ Health beliefs, ▶ Memory

## Suggested Readings

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- Carstensen LL, Mikels JA (2005) At the intersection of emotions and cognition: aging and the positivity effect. *Curr Dir Psychol Sci* 14(3):117–121
- Chipperfield JG, Perry RP, Weiner B (2003) Discrete emotions in later life. *J Gerontol: Psychol Sci* 58B(1):P23–P34
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- Lawton MP (2001) Emotion in later life. *Current directions in psychological science*. 10:120–123
- Mroczek DK (2001) Age and emotion in adulthood. *Curr Dir Psychol Sci* 10:87–90
- Ong AD, Bergeman CS (2004) The complexity of emotions in later life. *J Gerontol: Psychol Sci* 59B(3):P117–P122

## Suggested Resources

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- American Association of Retired Persons (AARP). [www.aarp.org/ageline](http://www.aarp.org/ageline)
- Family Doctor. [www.familydoctor.org/seniors.xml](http://www.familydoctor.org/seniors.xml)
- Health on the Net Foundation. [www.hon.ch](http://www.hon.ch)
- University of California—San Francisco Alzheimer's disease research center, memory and aging center. <http://memory.ucsf.edu/Education/Topics/emotions.html>



# Employment

*Kristin A. Cassidy*

Whether it is due to financial necessity, a desire to avoid the perceived boredom of retirement, or the excitement of pursuing the adventure of a new career, older adults are remaining in or returning to the workforce in larger numbers, and many employers are glad they are. In the last 20 years, the percentage of people over 65 who are employed has increased from about 10–14%. With people living longer, healthier, more active lives, and with the aging of the baby boomer population, 20% of the labor force is expected to be above 55 by 2015.

A telephone survey conducted for a study by the American Association for Retired Persons (AARP) found that 69% of workers aged 45–74 plan on working in some capacity during their retirement years. Some people find after retiring that they are not able to make ends meet on the fixed income they receive, or they may need extra money to cover their ever-increasing medication and health-care expenses. Some retirees find that they miss the social interaction and stimulation they got from working. Still others may just want a little extra cash to spend on traveling, entertainment, or spoiling their grandchildren. These types of older workers may be interested in the financial or social advantages of returning to work, but do not want the pressure and headaches associated with a career. Or they may choose to work only part-time since the Social Security retirement or survivor benefits of people who are under 65½ years could be reduced if they earn more than a certain amount of money. Plenty of low-stress job opportunities are available for these situations. Many retail and grocery stores hire seniors as greeters. Some factories have even created a “seniors only” production line.

In the AARP telephone survey, 67% of the workers interviewed had concerns that age discrimination remains a major barrier to their advancement and well-being in the workplace. Two thirds had personally witnessed or experienced age discrimination on the job. Between 2000 and 2002, the number of age-discrimination complaints filed with the Equal Opportunity Commission rose nearly 24%. In addition to age discrimination, doubts about job security and the perception that employers undervalue experience ranked

high on the survey respondents’ list of challenges in the workplace.

Some employers may be hesitant to hire older workers due to common stereotypes about the abilities and capacities of older adults. However, after hiring older workers, many employers are finding that most of these myths are generally not true. For example, in contrast to the common perception that older workers are not willing to learn new skills, 88% of the older workers surveyed for the AARP identified “the opportunity to learn something new” as an absolutely essential part of their ideal job. According to another research study conducted on behalf of the AARP, employers report that older workers often bring to a job the valuable qualities of experience, focus, and stability which are not seen as often in younger workers. Employers gave high ratings to older employees for the highly valued traits of “loyalty and dedication to a company,” “commitment to doing quality work,” “dependability in a crisis,” “ability to get along with coworkers,” and “willingness to be flexible about doing different tasks.”

Although some businesses may still discriminate against older workers, an increasing number of employers are recognizing the advantages of having older, more experienced, dedicated workers on their staff. As the baby boomers near retirement age, more employers will begin to run into issues when trying to find competent employees to replace the workers who have spent years developing and refining their knowledge and skills. Many employers are beginning to offer a more flexible work environment in order to keep these valuable workers as long as possible. For those seniors with less appreciative employers or who are looking for a change, but are not quite ready to give up the careers they have worked so hard to develop, there are several websites dedicated to help put older adults in touch with employers seeking their knowledge and experience.

Many seniors see retirement as an opportunity to embark on a career they had always wanted to try, but were too busy to pursue. Again, there are many websites that can help older adults get in touch with training programs. Many community and state colleges have programs that allow seniors to take classes at a reduced rate or to audit classes for free. This is another great way to gain knowledge and training in a new field. There are also plenty of opportunities for seniors to volunteer with an organization to gain experience,

which can then be used to qualify for a job in a new career field.

Regardless of the reason for working, the future looks bright for older workers and the companies and organizations that employ them.

## Related Topics

- [Altruism and volunteerism](#), ➤ [Early retirement](#),
- [Pension](#), ➤ [Retirement](#), ➤ [Role loss](#)

## Suggested Resources

AARP careers after 50. <http://www.aarp.org/money/careers>

The business case for workers age 50+: planning for tomorrow's talent needs in today's competitive environment, prepared for AARP by Towers Perrin, December 2005. [http://assets.aarp.org/rgcenter/econ/workers\\_fifty\\_plus.pdf](http://assets.aarp.org/rgcenter/econ/workers_fifty_plus.pdf)

Experience works: the nation's leading provider of training, employment, and community service for low-income older people. <http://www.experienceworks.org>

Senior Community Service Employment Program (SCSEP). <http://www.doleta.gov/seniors>

Social Security Administration, How work affects your benefits. <http://www.ssa.gov/pubs/10069.html>

Staying ahead of the curve: the AARP work and career study, September, 2002, prepared for AARP by Roper ASW. [http://assets.aarp.org/rgcenter/econ/d17772\\_multiwork.pdf](http://assets.aarp.org/rgcenter/econ/d17772_multiwork.pdf)

## Empty Nest Syndrome

*Sara Harkness*

First introduced in 1914 by writer Dorothy Canfield, the concept of “empty nest syndrome” was clinically identified and popularized in the 1970s as a group of symptoms including depression, loneliness, and low self-esteem, found among mothers whose last child had recently moved out of the family home. A great deal of sociological research since then has sought to find out how the “empty nest” relates to mothers’ (and to a lesser extent fathers’) well-being, and how other circumstances such as being employed outside the home may influence the experience.

The term “empty nest” evokes different images depending on whether one is a sociologist, psychologist,

therapist, parent, or even a realtor or travel agent. For sociologists, the “empty nest” is a household composed of adults whose children have moved out, but who have not yet reached old age themselves. Several trends have contributed to the emergence of this household type in the United States in the last 50 years, including greater longevity, smaller family size, earlier completion of childbearing, and children’s increasingly younger departure from the home.

The “empty nest” stage is by no means a universally difficult life-stage for mothers; on the contrary, increased well-being is often reported. As expected, women who work outside home are generally happier than full-time homemakers; but surprisingly, employment does not seem to affect a woman well-being at the “empty nest” transition. A recent national study found that parental well-being increases after the children leave home if there is frequent contact, but decreases when the opposite is true. Interestingly, the great majority of parents in their sample reported that they had seen or talked to one of their children within the next day.

The “empty nest” as a life-stage appears to be limited not only historically but also culturally. In the United States, empty nest households are mainly white and middle-class, while lower income whites and other ethnic groups, such as African Americans and Mexican Americans, tend to maintain larger, more extended households, and keep closer ties across generations. Demographers have also recently charted a “revolving door” trend in which previously launched children return to the parental home after divorce or financial difficulties.

European countries vary greatly in the age at which children leave home, due to both economic constraints and cultural traditions. In northern European countries, young people are able to leave home relatively early thanks to generous government supports. In contrast, in Italy and Spain, the age of leaving home has actually increased in recent years due to difficult economic circumstances. Parents there complain good-naturedly of the “crowded nest” with children up to their thirties still living at home. Regardless of age, there is a strong cultural expectation throughout continental Europe of continued frequent interaction with adult children and emotional or material support from parents.

Clinical approaches to the “empty nest syndrome” have often linked its symptoms to women’s physical changes at midlife, especially menopause, even though

the timing of the “empty nest” transition varies widely in relation to each mother’s life course. Research has not shown any general relationship between menopause and distress at children’s departure. The recent clinical literature echoes familiar American cultural themes of fulfilling work and the opportunity for individuation and increased autonomy, provided that one can “let go” of the parental role.

In contrast, Robert Putnam’s depiction of the disappearance of “social capital” in American society emphasizes the importance of social connectedness for well-being. From this perspective, children in many American families today may provide parents with their main links to the community through participation in sports and other group activities. For these parents, the “empty nest” transition may turn out to be more problematic than it was for earlier generations who had multiple ties to their extended families and communities.

Social connectedness may be the most fundamental aspect of environmental influences on the “empty nest syndrome.” The question still remains as to why some mothers (and fathers) experience more distress over the “empty nest” than others living in apparently the same circumstances. Here, research has been hampered by ideological constraints, especially the idea that parents should gradually release the ties of attachment to their growing children, in reciprocity with the children’s own weakening ties to their parents.

On the contrary, from an evolutionary perspective, it could be suggested that parents, like their children, depend throughout their life on the continued availability of those with whom they have the closest emotional bonds, and that attachment to children cannot be substituted with other attachment relationships (as with a spouse), no matter how gratifying or important those other relationships are. If this is true, it seems likely that individual variation in response to the “empty nest” life-stage will show the same types of differences as are seen in childhood attachment, and parents, who have experienced insecurity or loss in childhood attachment relationships, will be more vulnerable to the “empty nest syndrome” in adulthood.

## Related Topics

- [Coresidence](#), ➤ [Depression](#), ➤ [Family relationships](#),
- [Menopause](#), ➤ [Role loss](#)

## Suggested Readings

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## End-of-Life Care

*Stuart J. Youngner*

There are many complexities to be considered in choosing appropriate end-of-life care; patients, families, and health professionals are often faced with tough medical and ethical decisions. Medical advances such as mechanical ventilators, hemodialysis machines, pacemakers, defibrillators, and drugs to maintain blood pressure can prolong and sustain life. These technologies and the health professionals trained to use them were organized into special areas in the hospital called intensive care units (ICUs). Today, ICUs account for approximately 20% of the beds in modern medical centers. Pediatric, newborn, surgical, medical, cardiovascular, neurointensive, and other ICUs provide technology that can, in almost every instance, prolong the moment of death for seconds, minutes, hours, days, weeks, or even longer. Yet, the mere prolongation of life is not always desirable. It often comes with unwanted suffering, separation from home and family, and loss of dignity.

The timing of death has become a matter of deliberate choice in most institutional deaths. This has placed an enormous burden on patients, families,

health professionals, and health-care institutions. Yet, early on, there was little or no guidance from the law, medical and nursing codes, or hospital policies. Over the last 30 years, our society has engaged in a deep and intense discussion about the ethics and procedures that should guide end-of-life decisions. This discussion has been heavily influenced by a new emphasis on individual rights and autonomy throughout our society—in contrast to more paternalistic traditions in the medical profession and in medical institutions. The discussion has taken place in the courts, in professional societies, in the press, in state and federal legislatures, and even in popular culture—movies, books, and TV dramas.

## Resuscitation

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A debate continues over policies that pertain to the presumption that all hospitalized patients wish to be resuscitated if an acute emergency arises in their care. Many treatment centers have established policies for “default” resuscitation action, for instance, if a patient suffers from a life-threatening episode such as cardiac arrest. Hospitals across the country have established policies in which cardiopulmonary resuscitation (CPR) is administered if a patient in the hospital suffers cardiopulmonary arrest. CPR—with intubation, mechanical ventilation, external chest massage, and other invasive procedures—has been shown to be an effective intervention to reverse sudden cardiac arrest in otherwise healthy individuals.

This type of clinical care policy is controversial because any other intervention, including giving a patient an aspirin, requires a formal order from a doctor. CPR, on the other hand, is administered *unless* there is a specific order not to resuscitate—a “do not resuscitate” (DNR) order. This issue is all the more significant because CPR is a highly invasive intervention that can result in fractured ribs, punctured lungs, and tremendous loss of dignity. Since approximately 70% of Americans die in health-care institutions, millions are subject to this aggressive, but too often fruitless intervention.

In the early 1980s, a Presidential Commission was established to make specific recommendations about how our society should deal with end-of-life decisions. Its report, *Deciding to Forego Life-Sustaining Treatment: Ethical, Medical and Legal Issues in Treatment Decisions* was highly influential, as were a series of court cases from Karen Quinlan in 1976 to Nancy Cruzan in the

early 1990s. Efforts were made at local and national levels to establish clear guidelines for withholding or stopping potentially life-sustaining treatments (like CPR) and a clear consensus emerged in some areas of end-of-life care.

## Consensus for Care

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**Decisionally-capable patients** Decisionally capable adult patients have a right to refuse medical intervention and may insist that any interventions already in place be stopped. This includes not only the patient’s right to refuse resuscitation but also interventions such as mechanical ventilation, dialysis, chemotherapy, admission to an ICU, and even the artificial provision of fluids and nutrition. The latter has been an extremely controversial issue because provision of food and nutrition is so basic to our social relationships. However, provision of fluids and nutrition through a nasogastric tube or a tube surgically placed through the wall of the abdomen into the gastrointestinal tract is considered a medical intervention subject to the will of a competent patient.

**Documentation and discussion** Patients and their families must be fully informed by the physician of the alternatives and given the choice of how aggressive care will be. Furthermore, these discussions and their conclusions must be documented in the medical record. Decisions should be revisited on a regular basis as clinical circumstances develop and change.

**Stopping Life-sustaining treatment does not mean ‘abandonment’ of the patient** A decision to allow a patient to die does not signal the end of the physician’s responsibility for the welfare of the dying patient. Attention must turn to comfort—for example, pain control, psychological and spiritual support, and other ways of maximizing the dignity and social function of the patient. As noted below, this set of goals has become the principal mission of the hospice and palliative care movements.

## Other Developments

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**Advance directives** Although patient autonomy became the guiding principle in end-of-life decision-making, many if not most patients are no longer competent to make decisions when they must be

made. Patients may be too sick to participate in decision-making because of delirium, coma, or even dementia. Advance directives such as living wills offer the opportunity to carry a person's wishes about treatment into a future in which he or she may no longer be capable of making decisions.

Living wills are the best known example of advance directives. In a living will, a patient may state that (e.g., if they are in a terminal condition and unable to speak for themselves), they want only comfort care. An alternative to living wills is appointing a legal proxy or durable power of attorney. This approach allows patients to designate the person they want to speak for them and gives them a chance to talk in detail with that person ahead of time.

All states have laws recognizing advance directives, but most people have not executed them. Recently, there has been criticism of advance directives pointing out that end-of-life decisions are so varied and complex that no document can adequately anticipate them.

**Medical Futility** As the patients' rights movement flourished, patients and families experienced an increased influence on end-of-life decisions, supported by hospital policies and professional ethics codes. Although some patients and families exercised their rights by refusing treatment, others demanded it. Physicians and nurses began to object to providing what they considered to be futile care at the end of life. Their professional duty, they claimed, was to benefit patients, not merely cause physiologic effects. For example, providing CPR to patients dying of multiple organ system failure was hopeless and harmful. Furthermore, the rights of patients to refuse treatment were negative rights, found in the law against battery or unlawful touching. Nowhere did the law say patients had a positive right to nonbeneficial care.

Futility, however, is difficult to define and necessarily involves value judgments about how remote a chance has to be before it is not worth taking and what counts as a benefit. Many commentators saw futility disputes as a failure of communication between health professionals and families. Some hospitals have instituted futility policies that include a series of reviews with family and/or patient participation. Some see futility as a stalking horse for rationing—cutting off costly end-of-life care when it has little to offer.

**Ethics Committees** Virtually all hospitals now have clinical ethics committees to provide education,

formulate end-of-life and other policies, and increasingly provide consultation services to patients, families, and health professionals struggling with tough decisions. Ethics committees are generally interdisciplinary. Their members include: physicians, nurses, social workers, clergy, administrators, and lawyers. Often they include one or more lay members to provide an "outside" perspective. Some hospitals use the individual ethics consultant to provide consultation services. In some large academic medical centers, hundreds of ethics consultations are performed each year. Consultants or committees offer advice, leaving the final decision-making in its traditional place with the responsible physician, the patient, and the patient's family.

**Hospice and Palliative Care** Until the 1960s and the publication of Elizabeth Kubler-Ross's book, *On Death and Dying*, these subjects were taboo. Physicians regularly withheld information about terminal illness, and patients and families shied away from discussing it. Medical students and residents were taught nothing about how to talk with dying patients who were often isolated in the hospital setting. Following Kubler-Ross, a number of scholars studied the psychosocial phenomenon of dying and offered practical suggestions about how to talk with dying patients in a constructive way. The rise of life-saving technology in the 1970s in many ways sidetracked this newfound interest in helping patients, families, and health professionals deal constructively with the natural phenomenon of dying. Instead, the emphasis was on saving and, too often, extending lives unreasonably. As we have seen, patients and families reacted to this "technological imperative" by establishing a right to refuse unwanted end-of-life treatment. Physicians and nurses reacted by claiming a professional right to deny futile and invasive care.

During this same period, there was a growing recognition that in the midst of our aggressive technological treatment environments, terminal patients too often received inadequate treatment of their pain, depression, social isolation, and spiritual needs. Out of this recognition, the hospice and palliative care movements were born. Like Kubler-Ross, who brought attention to the inadequacy of the psychosocial response to the reality of death and dying in a pre-technological era, a host of scholars and clinicians focused on the ways health professionals could improve the quality of life of patients as they died in the midst of medical technology.

The hospice movement, inspired by Cicely Saunders in England in the late 1950s, emphasized a unique philosophy. It recognized that sometimes aggressive treatment was unwanted and that specialized care could substantially relieve the traditional burdens of the dying. The hospice movement has grown enormously in the United States and hospice care is now supported by health insurance, including Medicare. Part of the motivation of this movement has been the growing recognition of the inadequacy of the care of the dying. Early on, hospices were separate institutions where patients spent their last days in the care of persons technically and philosophically trained to deal with their needs. As the demand for hospice care has grown, its delivery has moved primarily to the home and to nursing homes where patients are dying.

While hospice care has traditionally focused on the dying (some define this as a predicted 6 months to live), palliative care has taken the position that the dichotomy of aggressive treatment or acceptance of death is a false one. Instead, there should be attention to relief of suffering, rehabilitation and support for caregivers all along the spectrum of care. Some observe that hospice and palliative care are not so different. Both are humanistic efforts to relieve suffering and maximize quality of life. Moreover, while hospice deals with terminal patients, many of those patients are happy to be alive and, while emphasizing comfort care, also desire limited measures to prolong their lives.

## Conclusion

With new innovations in medical technology, human beings are faced with difficult decisions regarding end-of-life care. Individual decisions are complex and are dependent on a variety of cultural, psychological, and economic factors. Although our society has forged a general consensus about the laws and procedures for dealing with these complicated human dilemmas, we must still deal with the coming realities of rationing of scarce and expensive medical resources.

## Related Topics

[▶ Death](#), [▶ Death with Dignity Act](#), [▶ Euthanasia](#),  
[▶ Physician-assisted death](#), [▶ Physician-assisted suicide](#), [▶ Quality of life](#)

## Suggested Readings

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## Suggested Resources

- American academy of hospice and palliative medicine 2006, Glenview, IL (February 28, 2006). <http://www.aahpm.org>
- Americans for better care of the dying 2006, Alexandria, VA (February 28, 2006). <http://www.abcd-caring.org>

## Endometrial Polyps

*Linda Darlene Bradley*

Endometrial polyps are benign (noncancerous) growths found within the uterine cavity. Usually they are asymptomatic and remain undetectable for decades. In women without symptoms, they are often found coincidentally when pelvic ultrasound (special procedure to examine the pelvic cavity) is performed for unrelated problems. However, in women with abnormal uterine bleeding, investigation may lead to their detection. Symptoms most often related to uterine polyps include abnormal bleeding, postcoital staining (bloody vaginal discharge after sexual intercourse), chronic vaginal discharge, dysmenorrhea (painful menstrual periods), or infertility. Generally abnormal bleeding is characterized with increased clotting, intermenstrual or premenstrual spotting, or heavier menstrual flow. Women utilizing the medication tamoxifen

therapy have a higher incidence of endometrial polyps. Additionally, one fourth of women with endocervical polyps will have an endometrial polyp.

Luckily, 99% of polyps removed by operative hysteroscopy (procedure to remove polyps via a tube inserted into the uterus) are benign. In symptomatic women, however, operative hysteroscopic removal is imperative to evaluate histology (polyp tissue makeup) associated with the endometrial polyps. What are the usual histological (cellular composition of the tissue) findings detected? Evaluation histologically demonstrates polypoid tissue covered by endometrium (uterine wall tissue) with glands of variable size and shape, and contains fibrotic stroma (fibrous foundation tissue) and thick-walled blood vessels. Functional polyps are defined as having surface endometrium that contains either proliferative (growth type) or secretory (secreting function) phase endometrium. Nonfunctional polyps have inactive endometrium that is in dysynchrony (out of stage) with the endometrium. Endometrial cancer and hyperplasia (excessive tissue growth) rarely occur within an endometrial polyp. In fact, only 1% of endometrial polyps may have a coexisting malignancy present. Endometrial polyps may coexist with other lesions including endometrial hyperplasia and submucosal fibroids (masses/fibroids growing the uterine cell wall). Although cancer is rarely found within an endometrial polyp, removal because of abnormal bleeding is imperative—to both treat menstrual dysfunction and to reliably exclude premalignant or malignant disease. When totally asymptomatic polyps are detected, there is little justification for operative intervention.

Recently transvaginal (through the vaginal opening) ultrasound (TVUS) has become an integral component of modern gynecologic practice. Ultrasound is frequently requested for evaluation of pelvic pain, infertility, screening purposes, and inadequate subjective bimanual examination (normal gynecological examination). On occasion, the ultrasonographic appearance of the endometrial echo (findings of the ultrasound) may be suggestive of an endometrial polyp. Clinicians find ultrasound particularly helpful in imaging the endometrium. The characteristics of the endometrium gauge the health and well-being of the uterus. How is the health of the endometrium measured? Ultrasonographers (ultrasound specialists) can reliably determine the endometrial thickness, echogenicity (ability of the tissue to be permeated by ultrasound), and texture of the endometrium. When

the endometrial echo is thickened, then gynecologists can better ascertain the etiology with saline infusion sonography (SIS) or office hysteroscopy (additional specialized techniques to better visualize the interior of the uterus). These quick office-based procedures can reliably determine the presence of endometrial polyps.

Patients who have symptomatic uterine polyps can be offered minimally invasive treatment with operative hysteroscopy. This technique permits rapid, safe, and effective transvaginal removal of the polyp with minimal anesthesia as an outpatient procedure. The removed tissue is analyzed histologically (under a microscope). Fortunately, polyps rarely reoccur. Less than 1% are malignant. Patients with symptomatic endometrial polyps should have them removed under hysteroscopic guidance, no longer is a blind dilation and curettage (D&C) sufficient or accurate in ensuring that the polyp is completely removed. Gynecologists increasingly are skilled in this novel procedure.

## Related Topics

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• [Uterine fibroids](#), • [Vaginal bleeding](#)

## Suggested Readings

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## Endoscopy

*Jason R. Taylor*

Endoscopy is an imaging modality used to visualize the gastrointestinal tract. It may be separated into two entities: upper endoscopy and lower endoscopy. Upper endoscopy is commonly referred to as an esophagogastroduodenoscopy (EGD), while lower endoscopy is

known as a colonoscopy. Other endoscopy procedures that are relatively new over the last 10 years include endoscopic ultrasound (EUS) and endoscopic retrograde cholangiopancreatography (ERCP). Specialty trained physicians known as board-certified gastroenterologists perform these procedures predominantly in the outpatient setting.

EGD involves passing a long, flexible black tube with a camera on one end from the patient's mouth, through the esophagus and stomach, and finally to the first part of the small intestine. The camera at the end of the tube relays images to a screen or television in the procedure room. The physician is able to visualize the gastrointestinal tract in real-time on the video monitor as he or she is moving the endoscope. An EGD lasts approximately 15–20 minutes and may be used for diagnostic and therapeutic interventions.

For example, while passing the endoscope the physician may take samples of tissue along the gastrointestinal tract. These tissue samples are collected in special containers and then sent to a laboratory where physicians use high-powered microscopes for evaluation and diagnosis. In addition, the multipurpose endoscope is equipped for treatment of several common disorders including erosions, ulcers, or suspected cancers in the esophagus, stomach, or small intestine.

ERCP is used to diagnose diseases of the pancreas as well as diseases of the ducts that drain the liver and gallbladder. The ERCP is performed using a long flexible black tube similar to the one used for EGD. The tube is passed from the patient's mouth, down through the esophagus to the stomach and into the small intestine. The ERCP tube differs from that of EGD by slight structural variations. The ERCP tube has a small camera on the side, instead of the end like the EGD, and allows the physician to view the opening of the duct that drains the pancreas. The physician may then pass wires through a port next to the camera into the pancreatic ducts. This can help remove stones in the ducts, improve unusual narrowing or blockages, and biopsy suspected tumors.

EUS is a relatively new imaging modality used to visualize the pancreas, the gastrointestinal tract, and their surrounding organs by means of ultrasound. The EUS endoscope is actually fitted with an ultrasound at the end of the long, flexible black tube that relays images to a television screen. This imaging has helped a great deal with the diagnosis of masses or other abnormalities outside of the gastrointestinal lumen.

In addition, a needle may be passed through a port next to the ultrasound device at the end of the tube in order to sample the tissue. Therefore, the gastroenterologist may help diagnose a mass by using the EUS to see the lesion and then take a tissue sample for collection instead of having to refer the patient for open abdominal surgery.

Like the EGD and the ERCP which help diagnose diseases of the upper gastrointestinal tract, a colonoscopy may be used to diagnose diseases of the lower gastrointestinal tract such as abnormal growth of tissue, causes for bloody stools, unexplained diarrhea, constipation, abdominal pain, or anemia. The device used to perform a colonoscopy is similar to an EGD in that it is a long flexible tube with a camera on one end. Preparation for the procedure requires drinking laxatives or enemas the night prior to the procedure and fasting from at least 8 hours prior until after the procedure is completed.

The procedure is performed under local anesthesia (conscious sedation) and typically lasts 30–45 minutes. Therapy with the endoscope may be performed for lesions in the rectum and large intestine; however, the majority of the indications for a colonoscopy are for diagnostic or screening purposes.

Cancers of the colon and rectum are the second leading cause of death in the United States. Therefore, colonoscopy has become an important screening tool for colon cancer. Current recommendations are for a colonoscopy in all patients older than 50. Patients with a family history of colon cancer should have a colonoscopy done earlier than the general population, generally 10 years prior to the age at diagnosis of their first-degree relative.

After an EGD, EUS, ERCP, or colonoscopy, a patient will remain in a waiting room for 30–60 minutes to recover from the procedure and discuss the findings with his or her physician. After conscious sedation, it is not recommended for a patient to drive an automobile. Therefore, patients are recommended to have a friend or family member available to drive them home. If these procedures are performed as an outpatient, it is generally safe to return to work the following day and perform normal activities.

Endoscopy has revolutionized diagnosis of gastrointestinal disorders. It not only allows a physician to directly visualize the gastrointestinal tract but also enables tissue sampling for microscopic diagnosis of abnormal lesions or masses. Patients should feel secure that the procedures have minimal complications,



are widely available, and may be performed in the outpatient setting.

## Related Topics

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• Colonoscopy

## Suggested Readings

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Davila RE, Rajan E, Adler D et al (2005) ASGE guideline: the role of endoscopy in the diagnosis, staging, and management of colorectal cancer. *Gastrointest Endosc* 61(1):1–7

## Suggested Resources

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American College of Gastroenterology. [www.acg.gi.org](http://www.acg.gi.org)

## Environment

*Bettina A. Rausa*

The environment is made up of the chemical, physical, and biological agents to which we are exposed during the course of our lives either at home or at work. The environment affects our health through exposure to pollution and other toxins that are largely the result of our own making. In 2002, the Environmental Protection Agency (EPA) launched its aging initiative to examine the environmental health hazards facing older persons. Elders are at a higher risk of the effects of the environment, given the progressive decrease in the functions of several organs and body systems, and the accumulation of toxins in the body manifesting through a variety of diseases that can lead to disability and/or death.

## Air Pollution

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Indoor air pollution is a special concern for seniors, who typically spend long periods of time indoors. Indoor air, comprising contaminants penetrating from outside and those generated indoors, can contain secondhand smoke, fumes from household cleaning products, and even carbon monoxide, which can be dangerously toxic, especially to those who are at risk of heart disease and stroke. Secondhand smoke is one of the worst indoor air pollutants and contributes to heart disease and stroke. Wood-burning stoves and fireplaces generate fine carbon air particles that can trigger chest pain, palpitations, shortness of breath, and fatigue, especially in elders with heart disease. Prevention strategies include proper ventilation, avoiding smoking indoors and enclosed areas where smoking is permitted, and eliminating indoor wood burning.

Outdoor air pollution consists of particulate matter or soot and gases that originate from a variety of sources including vehicles, power plants, industrial smokestacks, and fires. The EPA set National Ambient Air Quality Standards (The Clean Air Act) for pollutants considered harmful to public health and the environment and over 50% of the US population lives in an area that exceeds those standards including the elderly who are at the greatest risk for lung and heart disease. Studies show that hospitalizations for heart attacks, arteriosclerosis, and pulmonary heart disease increase during bad air days. The immune system is also impacted by air pollution, and the inhalation of toxic gases and particulate matter leads to lung infections, and decreases the defense system cells used to fight off bacteria.

The toll on individual body organs and systems as the result of airborne environmental toxins is considerable. The upper aerodigestive tract is the main route of contamination; and when inhaled, the components of smog can be irritating to the mucous membranes leading to chronic sinusitis. Exposure to solvents, pesticides, and many other inhaled pollutants may also cause tumors, hypertension, and angina.

A wide variety of materials found in air also enter the bloodstream, including benzene, lead, and other heavy metals, carbon monoxide, pesticides and herbicides. These materials have damaging effects on blood cells, bone marrow, the spleen, and the lymph nodes. Carbon monoxide can interfere with the blood's oxygen-transport capability and severe overexposure

can result in death due to asphyxiation or permanent damage to the central nervous system. Lead, mercury, pesticides, and ozone exposure effects on the central nervous system include psychiatric symptoms and disorders involving mood, personality, cognitive, and motor responses such as brain damage, anxiety, depression, and increased aggression.

The skin is the body's external interface with the environment, particularly air pollution and sun exposure. Depletion of the ozone layer, which increases ultraviolet radiation, allows harmful amounts of radiation to penetrate the earth's surface, increasing the risk of melanoma. Because melanoma can take many years to develop, the risk of exposure increases with age. Preventing harmful exposure to the sun includes avoiding sunburns and tanning parlors, wearing protective clothing and sunscreen, and promoting and implementing early skin cancer detection programs. The eyes are also affected by ultraviolet radiation in a number of ways, such as age-related cataracts, sunburn, and degeneration of the cornea, which contributes to age-related macular degeneration resulting in blurred vision and blindness. Wearing glasses that block ultraviolet rays is recommended to help protect the eyes.

## Waterborne Pollutants

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There are a number of waterborne pollutants. One such pollutant found in drinking water is arsenic—best known for its role in tumor formation and its link to vascular diseases. Consumers should check federally mandated reports from water suppliers concerning arsenic detected in drinking water.

Lead is also commonly found in drinking water and contributes to increased blood pressure and skeletal deterioration. Lead can remain in the bones for decades. Menopause in women leads to the demineralization of the bones, allowing lead to seep out and enter the blood stream, which increases the risk of developing osteoporosis. Diagnosing symptoms of lead poisoning in older adults is difficult because symptoms of exposure are similar to what are commonly considered inevitable problems of old age: poor sleep patterns, slower reaction times, irritability, and impaired visual-motor coordination. Lead also impairs renal function causing slower clearance of medications from the body, resulting in higher concentrations

of drugs and increased risk of side effects—a special concern when elders consume many prescription drugs. To help prevent lead poisoning from drinking water, the EPA suggests running cold water at least 30 seconds, preferably 2–3 minutes, before drinking.

Exposure to lead and to other minerals has been implicated in neurodegenerative diseases seen in old age: Alzheimer's disease and Parkinson's disease. Since most cases of these diseases do not appear to have genetic causes, several different environmental agents may contribute to each disease. People exposed to high levels of lead are more likely to develop Alzheimer's disease, which afflicts half of those in their mid-eighties; pesticides are suspected of contributing to Parkinson's disease, which affects more than 1.5 million people in the United States, most of whom are above 60.

## Temperature

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“Excessive heat events” are prolonged periods when temperatures reach at least 10°F above the average high temperature. This rise in temperature can lead to heat stroke which causes the body's temperature control system to fail, leading to a rapid rise in body temperature causing severe and permanent damage to vital organs, disability and/or death. People with heart disease and stroke have impaired cooling mechanisms and are more vulnerable during heat events. Certain medications can also make individuals more susceptible to heat events and physicians should be consulted in case of a heat wave. The EPA recommends air-conditioning—even for a few hours a day—to protect against heat-related illness and death. Electric fans are not recommended when temperatures reach the high 90s. Taking a cool shower or bath, wearing lightweight, light-colored and loose-fitting clothing, drinking lots of fluids, avoiding caffeine, alcohol, and large amounts of sugar are also precautionary measures against heat stroke.

## Residential and Occupational

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Many elderly minorities live in urban areas that fail to meet EPA air quality standards, and many low-income and minority communities are located in close proximity to chemical and industrial settings where toxic waste is produced, including chemical waste disposal

sites, fossil-fueled power plants, municipal incinerators, and solid waste landfills.

Certain occupations expose humans to more potentially toxic chemicals and pollutants in higher concentrations. Farmers, miners, metal, wood, leather and textile workers, and health care workers are all exposed, more frequently and in higher density, to a variety of toxic chemicals, including pesticides, carbon monoxide, lead, ozone, and nitrogen dioxide. Exposure can be reduced by wearing proper clothing, engineering controls, using suitable respirators, masks and other personal protective devices, and proper ventilation. Another harm-reduction strategy is to increase dietary intake of antioxidants (e.g., vitamins A, B, C, and E) as well as magnesium (found in whole grains, legumes, and vegetables), and amino acids (foods of animal origin and some grains and legumes). Although hundreds of new chemicals are developed and added every year to the existing unique chemicals, few of these chemicals have been adequately assessed for potential toxicity, either individually or in conjunction with other chemicals.

Organizations such as the Environmental Alliance for Senior Involvement (EASI) and National Association of Physicians for the Environment (NAPE) believe that one of the best strategies to achieve environmental improvement is to involve elders in efforts to enlist others in NAPE's educational activities. The EPA's aging initiative; other institutions' focus on the environment and its effect on elders' health, and the expected increase in the elderly population as baby boomers age, are giving rise to increased attention and resources targeted to gain a better understanding of the environmental impacts on older adults.

## Related Topics

[▶ Alzheimer's disease](#), 
 [▶ Cancer](#), 
 [▶ Cardiovascular disease](#), 
 [▶ Coronary risk factors](#), 
 [▶ Morbidity](#), 
 [▶ Mortality](#), 
 [▶ Parkinson's disease](#)

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## Epilepsy

*Adriana S. Tanner*

Epilepsy is characterized by unprovoked, recurring seizures resulting from abnormal discharges of cortical neurons (nerves). Neurons normally generate and propagate electrochemical impulses that act upon other neurons ultimately producing specific actions. During a seizure, normal neuronal activity becomes disturbed causing changes in behavior, feelings, actions, altered consciousness, and occasional convulsions. The clinical manifestations are many and depend upon the area of the brain involved.

Epilepsy affects about 1% of the population or about two million people in the United States with an incidence of approximately 50 new cases per 100,000 population annually. In third world or developing nations, the incidence can be as high as 100–190 per 100,000 (Sander and Shorvon 1996). The prevalence of epilepsy ranges from 40–100 per 100,000 in developed countries to 500 per 100,000 in developing nations. Between 3% and 8% of the population have one or more seizures during their lifetime. The cumulative risk of having at least one or more epileptic seizure during an 80-year life span is 1:10.

Epilepsy affects people of all ages. The prevalence of epilepsy demonstrates a bimodal (two peaks) distribution with respect to age. Rates are higher in the first decade, decline after this and during most of adulthood, and rise again after 60. Some studies have

suggested a shift to increased incidence in the elderly because of increases in stroke, cancer involving the brain, and dementia in aging. Men have a slightly higher risk than women in both the young and old.

Epilepsy is a wide spectrum of diseases that share at their source recurrent, unprovoked seizures caused by uncontrolled electrical discharges from nerve cells in the cerebral cortex. Epileptic seizures fall into two general categories based upon the origin of onset. Generalized seizures typically occur when neurons in both halves, or hemispheres, of the brain are activated at the same time, whereas focal or partial seizures occur when only a group of neurons in one region of the brain is activated. In a *simple focal seizure*, the person will remain conscious but may experience unusual feelings, movements, or sensations. In a *complex focal seizure*, the person has altered awareness and may display strange, repetitious behaviors such as hand and mouth movements. These repetitious movements are called *automatisms*.

Generalized seizures include: (1) *absence seizures* (where the person may appear to be staring into space), (2) *tonic seizures* (there will be stiffening of different groups of muscles), (3) *clonic seizures* (repeated jerking movements of different groups of muscles), (4) *tonic-clonic seizures* (stiffening of the body followed by repeated jerks of the arms and legs as well as loss of consciousness), and (5) *atonic* (where there is a loss of tone in the body).

Epilepsy is further classified into syndromes according to a set of common characteristics including type of seizures, findings on the electroencephalogram (EEG), age of onset, and cause. For some of these syndromes, the cause appears to be hereditary. For other syndromes, the cause is unknown. The classification used currently for both epileptic seizures and epilepsy syndromes is that of the International League Against Epilepsy (ILAE) which incorporates the basic categories of partial and generalized seizures, EEG findings, prognosis, pathophysiology, and etiology.

The evaluation of epilepsy starts with an adequate history and physical examination taken by a qualified health professional. A detailed account of the circumstances surrounding the seizure including symptoms or signs preceding it, warning signs or aura, description of the seizure, and the recovery or postictal period, is paramount. The individual's history should be thoroughly explored looking for risk factors and provoking

incidents. Questioning should also explore diseases that mimic epilepsy.

The EEG remains one of the most important tests for epilepsy. This test assesses distant potentials of the brain cortex using electrodes strategically located on the overlying scalp. The pattern and localization of epileptiform abnormalities not only help make a diagnosis of epilepsy but also assist in characterizing the type of epileptic disorder or epileptic syndrome.

Imaging is also a very important tool with recent electronic advances. A contrast-enhanced image of the brain using magnetic resonance or computed tomographic imaging is required following an initial seizure. Imaging assesses pathologies in the brain including tumors and vascular anomalies along with subtler abnormalities such as hippocampal sclerosis and cortical dysplasias. Finding these abnormalities could change the patient's management. Advance imaging techniques such as magnetic resonance spectroscopy (MRS), magnetoencephalography (MEG), positron emission tomography (PET), and single-photon emission computer tomography (SPECT), are being investigated to aid in evaluating patients with refractory epilepsy who might be candidates for brain resection surgery.

The treatment of epilepsy involves several modalities including behavioral modification, antiepileptic drugs, the vagal nerve stimulator, and surgery. Adequate rest, good nutrition, stress reduction, and avoidance of provoking factors such as alcohol and illicit drug use begin therapy. Special diets are sometimes used for refractory patients. The ketogenic diet, a diet rich in fats and low in carbohydrates, causes oxidation of fats instead of carbohydrates. Ketoacids are produced resulting in a metabolic acidosis. This diet's mechanism of action in preventing seizures is not well understood, but its effects in seizure reduction in children are well documented. Patients with epilepsy must also comply with driving restrictions and follow precautions such as avoiding heights, and swimming alone.

Antiepileptic drugs (AED) are the cornerstone in the treatment of epilepsy. The choice of which AED to prescribe depends on many different factors including the type of seizures or epileptic syndrome, seizure frequency, the patient's age and gender, likelihood of becoming pregnant, and other medical conditions. About 60–70% of patients with epilepsy achieve

adequate control with one medication. The remaining 30% require multiple agents and develop seizures that are resistant to medical treatment.

Surgery is an important treatment strategy in patients felt to be refractory to medication and in whom the area of the brain triggering the seizures is well identified. If the above is not a region considered *eloquent* (i.e., visual area, language area, movement area), the patient is thought to be a good candidate for epilepsy surgery. The most common type of surgery performed is resection of the temporal lobe with a success rate of about 70% seizure freedom, 1 year following surgery, in the United States. Patients believed to be uncontrollable with other therapies seem to benefit from surgery more when they are referred at an early stage.

The vagal nerve stimulator (VNS) is another alternative for patients who do not respond to medications and are not surgical candidates. This technique isolates the left vagus nerve in the neck and electronically stimulates the brainstem with retrograde impulses decreasing its seizure susceptibility. VNS decreases seizures by about 50% in about 50% of patients.

## Related Topics

▶ [Electroencephalogram](#), ▶ [Frontal lobe dysfunction](#)

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# The Error Catastrophe (Accumulation) Theory of Aging

Jessica Diggs

The error catastrophe theory of aging states that aging is the result of the accumulation of errors in cellular molecules that are essential for cellular function and reproduction that eventually reaches a catastrophic level that is incompatible with cellular survival. The central dogma of molecular biology refers to the unidirectional transfer of genetic information from deoxyribonucleic acid (DNA) to proteins. DNA carries all of the cells genetic information and instructions for carrying out the functions of the cell. Proteins serve a variety of functions. Some proteins serve in metabolic or structural processes, while others serve to catalyze cellular reactions.

The transfer of genetic information from DNA to protein occurs in a series of coordinated processes. The first process called *transcription* involves the transfer of genetic information from double-stranded DNA to single-stranded messenger ribonucleic acid (mRNA) that is able to transport this information from inside the nucleus of the cell, where DNA is housed, to the cytoplasm that surrounds the nucleus, where protein will be made. After this mRNA copy of the DNA is created, the mRNA leaves the nucleus for the cytoplasm and protein is synthesized through a process called *translation*. Once synthesized, these proteins fold into a three-dimensional form with grooves that can allow specific molecules to bind. The unique structure of the molecules formed, allow proteins to serve as enzymes that catalyze essential chemical reactions in the cell, including those reactions involved in transcription and translation. For example, RNA polymerase II is the protein (enzyme) responsible for the initiation of DNA transcription, and the aminoacyl transfer RNA (tRNA) synthetases are group of enzymes that catalyze the addition of amino acids (the building blocks of proteins) to tRNA molecules during protein translation.

The error catastrophe theory of aging was proposed by Leslie Orgel in 1963. This theory is based on the assumption that transcription and translation are

inexact processes that will result in a small, but potentially cumulative amount of error. Orgel proposed that these errors would accumulate with age until reaching a catastrophic level at which the organism could no longer sustain life.

## Consequences of Error Accumulation

Errors that occur during transcription or translation may result in misincorporation of amino acids into proteins, or errors in the protein sequence that may lead to a spectrum of structural and functional alterations of the protein and the cell. Some errors may not affect the final protein sequence; if the change resulted in a duplicate code for an amino acid, then no misincorporation will occur. Other errors that do lead to a change of amino acid may result in the misincorporation of an amino acid, but if it is one of similar structure, the protein molecule may still be fully functional, because the error did not effect the folding of the protein molecule, or may be in a location other than the protein's active site (the space where other molecules bind during chemical reactions). Errors that lead to the incorporation of incorrect amino acids that are dissimilar to the appropriate amino acid, or changes in the amino acids that line the groove/active site of the protein may potentially alter its affinity of the protein for its substrate (the specific molecule that the protein is designed to bind to), leading to a significant change in the function of the protein.

Because proteins are eventually degraded, if errors occur in a protein serving a metabolic or structural function, there may be some level of cellular dysfunction, but when these proteins are removed, the evidence of this error will be lost. If however this error occurs in a protein molecule involved in transcription or translation, more errors will be produced with each step, leading to an exponential increase in the error rate as successive molecules are produced. These errors and dysfunctional molecules would eventually accumulate in the cell, reaching a threshold where an error catastrophe would occur. At this point the cell can no longer function and cell death would ensue.

## Public Health Perspective

Although some scientific investigations have provided evidence of the accumulation of altered proteins

with aging, these changes have been attributed to post-translational modifications of the proteins, instead of transcriptional and translational errors. There were no alterations in the amino acid sequences of these proteins that would suggest errors in protein manufacturing. Other research has documented that while the fidelity of protein synthesis may be less than that of DNA, it remains relatively constant over time. Although this theory has been discounted based on available scientific evidence, there is still much left to be explained, for example, the accuracy of protein synthesis in young and old and the threshold at which errors may lead to cellular dysfunction. Filling these gaps in knowledge may elucidate the role of protein error in aging, which may ultimately have important implications for public health and aging.

## Related Topics

▶ [Accumulative waste theory of aging](#), ▶ [Anti-aging remedies](#), ▶ [Cellular theory of aging](#), ▶ [Life expectancy](#)

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## Ethics

*Ryan Spellecy · Laura Roberts*

Ethics is concerned with how we should live—the decisions we make, the actions we undertake (or fail to undertake), and the underlying concepts, values, and motivations that influence these choices.

In the field of bioethics, there are several principles that shape ethical decision-making. These principles include justice (the distribution of scarce resources such as health care in society), confidentiality (refraining from divulging private information entrusted to a person), veracity (truth-telling), autonomy (respecting the informed choices of capable persons and safeguarding vulnerable or compromised persons), beneficence (doing good or enhancing benefit), and nonmaleficence (doing “no harm”). These principles can sometimes align closely, for example, when a person with depression genuinely and knowledgeably consents to confidential treatment that has a high likelihood of benefit, and at other times be in conflict, for example, when a delirious patient demands discharge from the hospital against the advice of the clinical team shortly after undergoing surgery.

## Ethical Issues in the Care of Aging Persons

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The ethical issues one is likely to encounter in an aging population do not differ fundamentally from those in other populations, though certain issues arise with greater frequency. One example is informed consent, especially in relation to individuals with diminished capacity for health care decision making and end-of-life care.

## Informed Consent and Health-Care Decision-Making

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Informed consent is a foundational ethical element in the physician–patient relationship, and there are a number of useful models. At its core, informed consent requires that the patient receive the information he or she needs in a readily understandable and usable manner in order to make a decision in light of his or her own values and goals. The presentation of this information will of course vary from individual to individual, and may require slowing down, repeating information, engaging a translator for persons for whom English is not the primary language, illustrations, and other steps. Additionally, it is important to remember that informed consent is not a piece of paper that someone signs, and it is not an isolated event. Rather, informed consent is an ongoing process

that should be reviewed and updated with each visit or change in the treatment plan.

The reason informed consent is given such high priority is the recognition that medical advances have resulted in a wide array of options for patients, and the “right” treatment is a medical and intensely personal decision. Which outcome would result in an acceptable quality of life, how much risk one is willing to bear, and whether a course of treatment is too much of a burden is determined in large part by one’s values, goals, and life plans. The individual patient is uniquely situated to evaluate treatment decisions in accordance with his or her values, goals, and life plans, as they are the patient’s and he or she is intimately familiar with them. Additionally, it is the patient who must ultimately live with the outcome of the decision.

For individuals whose decision making ability is compromised, the requirement for respectful, personal value-guided decisions is no less. For instance, if a person has executed a health care power of attorney (POA, also known as a durable POA for health care) and appointed a health care agent or advocate should he or she become incapacitated, that person should make decisions for the patient as the patient would have wanted. At times, the agent appointed under the POA might make decisions as he or she would want, or makes decisions out of guilt or remorse for not having “been there” for the patient in the past. While this is a difficult situation, the agent needs to be reminded that he or she has a “job description,” that is, to make decisions according to the wishes and values of the patient. Useful questions to encourage such a decision making mindset include: “Did [patient’s name] ever discuss what she would want if she were in this situation?” “Did [patient’s name] ever have a friend or family member in a similar situation, and what did she think about it?” “If [patient’s name] were sitting here with us right now, what do you think she would tell us about the level of treatment she is receiving? What would she consider an acceptable outcome?”

However, if the patient does not have a health care POA, guidance concerning what the patient would want should be sought from family and friends. While local laws may (or may not) specify a chain of succession in legally recognized surrogate decision-makers, it is useful and appropriate to involve multiple family members and friends, as they may recall different conversations or experiences with the patient. Putting together the pieces of the patient’s values from

various sources can be done by holding a family meeting, in which social workers, chaplains, and the hospital ethics committee can be resources.

If there is no one available to make decisions as the patient would want them made, or provide insight into his or her values, a “best interests” approach should be used. A best interests approach is contrasted with the more subjective approaches discussed earlier because one must seek to make decisions in a more objective manner since information regarding the patient’s wishes is absent. This approach often seeks to make decisions that are consonant with what a reasonable, average, informed person would want in a similar situation. As with all of these approaches, local laws vary and should be consulted.

## End-of-Life Care Issues

End-of-life care poses many salient ethical concerns. Some of the common issues are whether there is a meaningful ethical difference between withholding and withdrawing treatment, adequate pain management, as well as questions of futility.

Ethically, there is wide consensus that voluntarily withholding treatment is equivalent to voluntarily withdrawing treatment, when done appropriately. Thus, if a patient who suffers from chronic obstructive pulmonary disease, or her surrogate, requests that mechanical ventilation not be started, or if ventilation is used on a trial basis and is found not to change the underlying disease progression, the two courses are ethically equivalent. A major reason is that the relevant cause of death is the underlying disease, not the actions of the health care team. This difference sets withholding and withdrawal apart from active euthanasia. In euthanasia, it is the actions of the physician, and not the underlying disease, that cause the death of the patient. Although there is some debate as to whether the reasons that lead us to consider withholding and withdrawing treatment as morally on par with one another would also ethically justify active euthanasia, there is widespread ethical acceptance of both withholding and withdrawing of life-sustaining therapies.

Provision of compassionate care is a central commitment of the profession of medicine. Patients trust that their caregivers will offer comfort and seek to relieve suffering in the context of a therapeutic relationship. Nevertheless, management with narcotic

(opioid) medications at the end of life may have the secondary effect (or a “double effect”) of suppressing physiological processes and potentially hastening death. Physicians at times express reluctance about using very high doses of pain-relieving narcotics for fear of causing the death of the patient; yet effective and intensive pain management at the end of life is not only ethically appropriate and compassionate but also ethically required.

There is an ethical tension intrinsic to the problem of alleviating suffering in a manner that may hasten death. The doctrine of double effect is often cited in defense of such practices, as it isolates the positive professional intent of the physician. Double effect has four criteria that must be satisfied for this rationale to be invoked:

1. The act must be good or at least morally neutral, that is, the treatment of pain and suffering in a terminally ill person must fulfill the requirement of seeking to benefit the patient.
2. The agent must intend the good effect and not the bad effect, which may be foreseen but not intended. In this situation, the intention is just to prevent pain and suffering, and not to end the life of the patient. A useful test here is to ask whether one would consider treatment a failure if the patient’s pain were controlled, and yet the patient lived. If not, one intends the good effect, not the bad.
3. The bad effect must not be a means to the good effect. Here one must not use the patient’s death as a means to end the suffering, although death may be foreseen, as noted above.
4. There must be a proportionately grave reason to risk the bad effect. In this instance, preventing intolerable pain and suffering at the end of life is certainly proportionate.

Another ethically important consideration in end-of-life care relates to the concept of futility. There are situations when a seriously ill person is nearing death and the health care team is concerned that aggressive treatment may be both burdensome and futile, and yet the patient or the surrogate decision-maker continues to ask for intensive therapeutic intervention. These situations are often very complex, emotionally as well as ethically.

To help anticipate and resolve decisions that may arise under such difficult circumstances, there have been numerous attempts to define futility so that set



criteria exist for whether or not a physician is obligated to provide care he or she believes to be futile. Distinctions between quantitative futility, in which the treatment has an extremely low chance of success, and qualitative futility, in which the treatment, even if successful, will be of no benefit to the patient but will merely prolong dependence upon intensive medical care, were initially thought to hold promise. However, if the chance of success is greater than zero, a strong case can be made for deferring to the patient, and defining benefit in relation to the values and preferences of the patient who must live out the illness and the consequences of intervention or nonintervention in his or her remaining weeks, days, or hours. This is at the heart of the underlying tension in the futility debate, that is, resolving the conflict between the wishes of the patient and the perceived professional obligations (e.g., beneficence, nonmaleficence, veracity) of the physician.

## Approaching Ethical Problems Constructively

The process of arriving at an ethical course of action in a complex health care situation often entails several steps. First, it will involve carefully identifying and clarifying which bioethics principles are involved and may be in conflict. It is often important to gather additional information (e.g., clinical data, background information on patient preferences, life history, and personal values, relevant institutional policies or legal requirements) and to seek counsel from colleagues or specific expertise from other professionals. Difficult ethical issues need not and should not be addressed alone. Identifying and consulting ethics resources, such as trusted mentors, associates, educational programs, and hospital ethics committees are wise strategies. In this collaborative, consultative process, it may be possible then to resolve and balance the competing concerns that exist in the situation. Finally, in almost all circumstances, it will be important to communicate sensitively, and with great care for confidentiality requirements, the decision process, rationale for choices undertaken, and anticipated outcomes. It is also important to listen and respond to the concerns that may arise for the relevant and often diverse “stakeholders” in the situation such as clinicians, family members, and hospital attorneys.

## Related Topics

➤ [Advance directives](#), ➤ [Death with Dignity Act](#), ➤ [Doctor–patient relationship](#), ➤ [Durable power of attorney](#), ➤ [Euthanasia](#), ➤ [Informed consent](#), ➤ [Lesbian ethics](#), ➤ [Patients’ rights](#), ➤ [Physician-assisted suicide](#), ➤ [Stem cell research](#), ➤ [Suicide](#)

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## Ethnicity

*Teddy D. Warner*

“Ethnic” usually refers to characteristics of a people, especially a group of people that share a distinct and common set of characteristics such as culture, religion, language, race, and nationality. This list of central characteristics used to define an ethnic group suggests the complexity of the concept and the varied ways in which it is used. In comparison, “race” (see [Race](#)) has traditionally been used to refer to groups defined by biological factors that are the basis of group differences, especially observable physical features. The validity of this conception of race has been seriously questioned by many authorities, and it is now common to consider race to be a social and political construction. “Culture” usually refers to shared elements that provide a basis for perceiving, believing, communicating, evaluating, and behaving within a common context. However, no consensus exists regarding precise definitions of ethnicity, race, or culture, and each concept has overlapping yet distinct meaning. It is unfortunately very common for people to use the terms ethnicity, race, and culture interchangeably.

The United States has long included many ethnic groups, races, and cultures. The country's recognition of this diversity and the considerable strength that such variety brings to the country are increasing. Many other nations are also experiencing increasing diversity among people, and tendencies to devalue cultural differences and to keep cultural and ethnic groups segregated are also declining. Diversity among peoples and groups of people with different ethnic characteristics enriches a society, bringing a greater breadth of perspectives, ideas, values, attitudes, and contributions. Over the last 50 years the world has increasingly recognized, although certainly not fully accepted, the value of cultural and ethnic differences. However, ethnic strengths historically have been built upon maintaining similar values and characteristics within a given ethnic or cultural group and keeping these characteristics distinct from those of other groups. Increasing diversity within a geographic area may lead to a blending of ethnic differences, thus risking the loss of unique aspects of various cultures and ethnicities over time.

For many in the United States, ethnic group also connotes "minority group," that is, a smaller group within the larger dominant group. This is an "ethnocentric" application of the concept—wherein it is used to refer to those outside the greater group but not to those among the majority group. Furthermore, ethnicity often connotes "race" or "nationality" to many people, particularly so-called races or nationalities that are not among the majority population. Thus, by this usage in the United States, whites or Anglos are not ethnic groups in the minds of most people, but Asians, blacks or African Americans, Hispanics or Latinos, American Indians, Alaskan Natives, and Pacific Islanders are, primarily because none of these latter groups represent a majority. In contrast, in Central and South America, non-Hispanic whites are in the minority and many local people may consider them ethnic groups in those locales. Furthermore, in parts of various American states, whites are not in the majority. For example, in New Mexico, no traditionally labeled group represents a majority (about 44% Hispanic, 44% non-Hispanic whites, 9% American Indians, and 3% other groups). The logical absurdity of this ethnocentric usage and meaning of ethnicity as commonly applied in the United States thus becomes apparent. More objectively, any group sharing a distinct and common set of characteristics would be considered an ethnic group, irrespective of its numbers relative to other groups, including whites,

Caucasians, and Anglos. But this suggests an additional problem in assessing and using ethnicity or race as a means by which to predict or classify groups of people—whites, Hispanics, blacks, Native Americans, and other large groups are not homogeneous regarding culture, religion, language, values, or nationality; in fact, it is clear that people within each "group" are quite diverse in all respects. Thus, although ethnicity is usually measured by simple broad self-assigned labels, it is actually a complex concept that reflects many dimensions.

The assessment of ethnicity is usually accomplished by asking people how they describe themselves, either with an open-ended question or, more commonly, by asking them to check which listed label best applies to them. Historically, a variety of such lists of ethnic group labels have been used, and the lists have changed over time. Currently, the following list is increasing in use in the United States: Asians or Asian Americans, blacks or African Americans, Native Americans (or American Indians) and Alaskan Natives, Pacific Islanders, white or Anglo, and "mixed" or "other." The latter category allows people to identify with more than one ethnic group. Note that "Hispanic or Latino" is omitted from this list because it is now recognized that Hispanic status represents a separate dimension relative to the larger list. In this fairly recent assessment scheme, Hispanic status is measured with a separate question that precedes the one above, thus recognizing that "Hispanics or Latinos or those of Spanish descent" may be among white or black "races" and also that Hispanic people are not a homogeneous group. Of course, Hispanic people are not homogeneous in many nonracial senses as well because Hispanic people who "originate" from Spain, Mexico, the Caribbean, South America, and the United States often have distinct cultures and other characteristics.

The current US categories used to assess "ethnicity" emanate from the US Federal Office of Management and Budget, which announced this system in 1998 and encourages other Federal agencies to follow it for the sake of consistency in reporting. The Department of Health and Human Services and the US Census Bureau among others have adopted this two-question approach. Those who use it, often to meet federal standards, are encouraged by government guidelines to consider making such ethnicity assessments at a finer-grained level, but they are not required to do so. This too suggests that the sociopolitical systems that have evolved this scheme recognize that ethnicity

is more complex than what these simple half-dozen categories or labels imply.

Assessing ethnicity (or race) in a population usually serves one of two major purposes. The first is descriptive, wherein the percentage of people that can be attributed to a particular broad ethnic group is provided as information to characterize a population. The second is analytic, wherein differences in other nonethnic characteristics or behaviors are reported to vary as a function of membership in different ethnic groups. We will discuss some of the issues concerning the analytic use of ethnicity, but first we will turn to a brief and simple review of the known general relationships of ethnicity to several major health status measures in the United States to illustrate the analytic use of ethnicity.

Health status indicators (HSIs) were developed as a part of *Healthy People 2000*, a set of objectives of the Department of Health and Human Services intended to help reduce disparities in health care among various groups in the United States and to encourage significant improvement for the population overall. In addition to reporting the rates of various illnesses, an “index of disparity” was used to summarize ethnic or racial differences in the HSIs. Examination of trends for the period 1990–1998 showed that most of the 17 HSIs improved for most ethnic and racial groups, although differences between groups did not change very much.

Infant mortality is often used as a principal measure of health status among groups and nations worldwide. In the United States, rates of infant mortality have been much lower for non-Hispanic whites, Hispanics, Asians, and Pacific Islanders than for blacks and Native Americans or Alaskan Natives, roughly by a factor of 2. During the 1990s, infant mortality decreased notably for all groups to 6.0/1,000 for whites, 5.8 for Hispanics, and 6.6 for Asians by 1998; although it declined by approximately 25%, it remained much higher for non-Hispanics blacks (13.9) and for American Indians or Alaskan Natives (9.3). Rates for low birth weight showed the opposite trend, increasing by as much as 18% for some groups over the decade: whites (6.6/1,000), Hispanics (6.4), Asians (7.4), blacks (13.2), and American Indians or Alaskan Natives (6.8). The percentage of women with no prenatal care during their first trimester of pregnancy ended with a marked decline of 24–35% in 1998 compared with 1990: whites (6.6/1,000), Hispanics (6.4), Asians (7.4), blacks (13.2), and American Indians or

Alaskan Natives (6.8). The rate of live births for females aged 15–17 showed a much more gradual decline for all groups over the decade, ending with the following rates: whites (18.4/1,000), Hispanics (62.3), Asians (13.8), blacks (58.8), and American Indians or Alaskan Natives (44.4).

The total death rate is also used as a prime HSI nationally and globally. The total death rate decreased over the 1990s by approximately 10% for all groups except American Indians or Alaskan Natives, who showed a 4% increase in death rate; the 1998 rates are: whites (453/100,000), Hispanics (343), Asians (265), blacks (711), and American Indians or Alaskan Natives (458). The ratio of rates between highest and lowest groups was 2.7 in 1998, the same as in 1990, indicating no reduction in overall health differences among groups.

Death rates by “violent” means showed substantial overall declines during the 1990s: homicide (28%), suicide (10%), and motor vehicle crash (15%). Percentages of decline across ethnic groups were roughly similar, with two major exceptions: (1) the rate of suicide in American Indians or Alaskan Natives actually increased (8%), and the rates of decline in death by homicide (11%) and motor vehicle crash (4%) were much lower than for the other groups; (2) Asians showed much lower decline in suicide rate (2%) than other groups, probably because their rate was already the lowest (6.0/100,000). The ratio of highest to lowest rate among ethnic groups (disparity ratio) actually increased over the period for motor vehicle crashes (2.6 to 3.7) and suicide (2.1 to 2.3), but declined for homicide (9.7 to 8.2).

Death rates by major diseases are also used as important indicators of health status in the United States. For example, rates of death from heart disease declined overall by 16% over the 1990s, and this decline was uniform for all ethnic groups, except it was notably lower for blacks (11%) and American Indians or Alaskan Natives (8%). End-of-decade rates by group were: whites (124/100,000), Hispanics (84), Asians (67), blacks (188), and American Indians or Alaskan Natives (97). The disparity ratio among groups actually increased slightly from 2.7 to 2.8. The decline in stroke death rate was much lower overall (9%) than for heart disease and was not uniform among groups, with that in American Indians or Alaskan Natives actually increasing (3%). Rates in 1998 by group were: whites (23/100,000), Hispanics (19), Asians (23), blacks (43), and American Indians

or Alaskan Natives (20), with an ethnic disparity ratio of 2.2, down from 2.5 in 1990.

A number of other trends in major HSIs illustrate the substantial differences in health among the various major ethnic and racial groups in the United States. Comparison of disparity indices in 1990 to those in 1998 reveals that for 11 of 17 HSIs, ethnic difference has shown a decline, but statistically only for 6 of the indicators, while 5 showed increases, and 3 of them significantly so. Thus, overall, little decrease in health differences seems to have occurred over the 1990s, and for some groups on some measures, notable increases were revealed, particularly for American Indians or Alaskan Natives. In fact, it is because of such health differences that the National Institutes of Health (NIH) now require all researchers whom they fund to include as research participants all minority (ethnic) groups, members of both genders, and children, unless satisfactory scientific justification for their exclusion is provided. NIH-funded researchers must report annually the number of research participants who fall into each of the ethnic group categories who have enrolled in their study. In addition, various institutes of NIH have released special announcements to solicit research focused on helping understand and eliminate health differences among Americans who are members of different ethnic, racial, or “minority” groups.

Much debate has focused on the appropriateness of using self-reported ethnicity or race as a variable to predict or explain differences in health and other outcomes. A substantial scientific literature over the last two decades discusses the serious scientific concerns surrounding the use of ethnicity as an independent variable. However, ethnicity and race (and gender) continue to be used as if they are potential causes of a wide range of health outcomes, in spite of the fact that many experts agree that measuring and using ethnicity for this purpose produces nothing more than descriptive results at best, and erroneous results at worst. Many authorities argue that ethnicity and race are simply sociopolitical concepts that have little, if any, basis in scientific reality. Others, however, argue that underlying genetic differences exist among ethnic and racial groups (and other groups), and that these genetic differences may well be important factors that contribute to risks for both mental and physical illnesses—knowledge about such factors might contribute to more effective diagnosis and better treatment. However, in the future the prediction and treatment of

disease are likely to be based upon individual genetic profiles, suggesting that distinctions made on broad racial or ethnic classifications will become unimportant. Still others argue that even if group genetic differences do not matter, cultural and social differences between ethnic groups contribute greatly to behaviors that are causes of, or associated with, a variety of health factors.

However, several experts have pointed out that the amount of variability in social, behavioral, cultural, and even genetic characteristics among individuals within specific ethnic or racial groups is almost always much greater than the variability between such groups. That is, it has often been argued that although genetic, behavioral, social, and cultural differences among ethnic groups may be predictors of average health status between such groups, it is much more important to examine differences within members of an ethnic group to understand the causes of health and illness and to increase effectiveness of diagnosis and treatment.

In addition, researchers often assume that all individuals in an ethnic group share some common characteristic associated with culture, and that the cultural characteristic is associated with mental or physical abnormality or some other issue. Two major problems are apparent with this thinking. First, as previously discussed, there is considerable variation among individuals within an ethnic group on almost all characteristics; that is, members of ethnic groups are not homogeneous regarding most characteristics. Second, ethnicity is usually only distantly associated with the health or other outcome being investigated and, indeed, ethnicity usually serves as a substitute or proxy for some other concept of more direct interest such as culture and, in particular, specific features of culture. That is, ethnicity is often used as a substitute measure for culture, or for attitudes or behaviors that are the actual causes of health or illness. Culture, attitudes, and behaviors are usually much more difficult to measure, and thus researchers simply assess ethnicity with self-reported labels instead, but at the cost of considerable imprecision in assessing the relationship between culture or behavior and health outcomes.

Measuring variables that are believed to directly cause outcomes is much more scientifically defensible. For example, if one were studying use of birth control and determined that those who identified themselves as “Hispanic” were significantly less likely to use birth

control pills, it would be scientifically imprecise (some would argue flat wrong) to say that being a member of an ethnic group “causes” use of specific birth control methods. A variable that might be closer to actually influencing the use of a specific birth control method might be “religious preference” because Hispanics predominantly identify themselves as Catholics, and the Catholic formal doctrine forbids use of birth control pills. But “religious preference” would still be a substitute variable because, although many Hispanics express a Catholic religious preference, all Catholics do not agree with church doctrine about birth control, and therefore some do use birth control pills. A more proximate predictor of pill use would be “attitudes about birth control,” the “degree of acceptance of Catholic religious doctrine,” or “prior experiences with using or not using birth control methods.” Measures of these possible causal variables are much more likely to accurately predict birth control use than ethnic group membership. Hence, researchers should carefully think about the likely causes of the outcome under study and measure the characteristics that are the most directly associated with the outcome, if feasible. Commonly, that means measuring past behaviors or current attitudes, beliefs, or values rather than asking people to report their ethnic group status. Good science requires directly measuring the variables that are related to culture, attitudes, or beliefs that are predicted to cause differences in outcomes—not relying on imprecise self-assessments of ethnic or racial group status.

Another serious question in assessing ethnicity involves how to meaningfully categorize individuals who are of “mixed” ethnicity or individuals who are not aware of their “full ethnicity.” If the attitude, belief, behavior, or value that was closely associated with the outcome under study were assessed instead of ethnicity, this dilemma would disappear. The great diversity within ethnic groups is often compounded by researchers who “homogenize” ethnic groups by comparing the responses of all “minority” ethnic groups to responses of whites, as if all members of all minority ethnic groups share something in common.

Another problem is that in many studies that detect differences in outcomes between various ethnic groups, the ethnic groups vary in many ways other than underlying culture, attitudes, or beliefs that are associated with ethnic status. For example, such groups often differ in educational and income level, age distribution,

language fluency, general acculturation, and many possibly unknown ways. Researchers sometimes attempt to “control” for such differences using statistics, but interpretation of analyses that “equate” groups using various “covariates” is fraught with serious logical problems. Simply put, real differences in groups cannot be meaningfully eliminated using mathematical “corrections.” Thus, ethnic groups that are different in many ways cannot be made equal with statistical controls in any clearly interpretable manner. Thus, unless various ethnic groups are equated on important variables, such as educational and income level, the effect of ethnic status on outcome variables is confounded with these other variables, and ethnic status cannot be attributed as the cause of outcome differences.

Several guidelines for using ethnicity in research have been made by many authors:

1. Make clear the assumptions that are the basis of the use and assessment of ethnicity in a particular context.
2. Test hypotheses about specific aspects of culture or other characteristics rather than using ethnicity as a substitute variable.
3. Consider matching samples of different ethnic groups selected for studies while retaining as much diversity within the group as feasible.
4. Report fully the sample characteristics and ways in which the sample was selected in studies.
5. Use large enough sample sizes to adequately detect the differences that are likely to be found in naturally occurring groups.
6. Use several measures and several assessment methods where feasible ensure that the concept that is being measured is actually the causal factor being studied (i.e., convergent validity).
7. Use cultural and/or ethnic experts to ensure appropriate translation of language and concepts of the measures being used.
8. Use study results to generate further research rather than assume that findings are valid based on single studies.

Thus, use of the concept of ethnicity should entail careful thinking and planning to enable the collection of data of the highest quality that most directly address the research question.

Irrespective of the fact that assessment of ethnic group status is usually very imprecise, it is clear that “ethnic groups” as commonly crudely assessed differ

on many measures of health status, but it is also true that such groups differ on many other characteristics, such as income, education, language use, general acculturation, attitudes, beliefs, values, and probably a host of other variables. It is thus inappropriate to attribute differences in health status to characteristics of ethnic status in any simple or direct manner. Different ethnic groups experience the world in different ways for many reasons, which in turn leads to differences among and within ethnic groups in many complex patterns. Indeed, different ethnic groups express different cultures in diverse ways, and it is the more direct study of specific features of culture (or biological factors that vary across populations) that may lead to greater understanding of the differential ethnic experience. This is superior to stereotypically treating all members of the same ethnic group as the same. That is, it is important to recognize the diversity between the many ethnic groups in the United States and in the world, but it is also important to recognize the immense diversity among members within each of those groups.

## Related Topics

[▶ Acculturation](#), [▶ African Americans](#), [▶ American Indians and Alaskan Natives](#), [▶ Asians and Pacific Islanders](#), [▶ Latinos](#), [▶ Minority seniors](#), [▶ Morbidity](#), [▶ Mortality](#), [▶ Race](#)

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## Suggested Resources

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## Euthanasia

*Cynthia M.A. Geppert*

Euthanasia literally means “good death” in Greek and its initial connotation was an act of “mercy killing” in which a physician intentionally caused the death of a patient to relieve intolerable and hopeless suffering. Voluntary euthanasia for the elderly was practiced in several ancient societies. Euthanasia has historically been viewed as a violation of Judeo-Christian values, and was therefore prohibited during most of Western history. The secularization of postmodern culture and the technological revolution in medical science reignited the debate over euthanasia and rendered it one of the most controversial issues in contemporary bioethics. Public discussion of euthanasia is often confused and conflated with physician-assisted suicide, and although some ethicists question the usefulness of the distinctions, it is important to understand the difference and nuances of vocabulary related to assisted death. The terms most often used in discussions of end-of-life ethics are defined in [▶ Table 1](#).

At the time of this writing, all forms of euthanasia remain illegal in the United States. Voluntary euthanasia was first legalized in Australia’s Northern Territory in 1995, although the law was repealed in 1997. The maximum experience with euthanasia has come from the Netherlands, which legalized active euthanasia and physician-assisted suicide in 2001 after years of unofficial toleration of the practices. Belgium passed similar legislation in 2002. Almost all laws and legislative proposals require conditions for justification of euthanasia which generally include that (1) the decisionally capable patient makes a voluntary request over a period of time; (2) the patient is suffering intolerably and there is no meaningful hope of recovery or relief; (3) the physician obtains appropriate consultation with at least

■ **Table 1**

**End-of-life ethics terms**

Term	Meaning
Physician-assisted suicide	A physician provides the means, such as prescribing a large amount of barbiturates, for a patient to take his own life
Passive euthanasia	A physician refrains from performing an act that would be life-sustaining, such as placing a patient with respiratory failure on a ventilator
Active euthanasia	A physician intentionally causes the death of a patient through administration of a lethal dose of medication
Voluntary euthanasia	A competent patient requests that a physician end his or her life either through passive or active means
Involuntary euthanasia	The life of an incompetent patient is ended without his or her request, such as disconnecting the respirator of a patient in a persistent vegetative state

one other colleague who agrees with the decision to perform euthanasia; and (4) certain designated clinical, regulatory, and public health provisions, such as reporting to the authorities, are completed.

## Euthanasia and Aging

The unresolved legal and moral issues surrounding euthanasia make it difficult to determine a precise prevalence, although most experts believe it is relatively rare even in the Netherlands. In a 1998 study in the United States Meier found that 18% of physicians reported receiving a request for euthanasia, but only 5% administered a lethal injection. Opponents of euthanasia have always been particularly concerned that the practice would be inappropriately utilized in vulnerable populations such as the elderly and terminally ill. Data from the Netherlands suggest that such exploitation has not occurred on any widespread scale. In 1995, approximately 59,700 individuals above 80 died in the Netherlands; 756 were euthanised. Among 44,110 nursing home patients with serious diseases who died over a period of 4.5 years, only 77 of the deaths were by euthanasia. Another objection to euthanasia often raised is that its availability would decrease older patients' trust in their physicians. Hall's 2005 national sample of 1,117 adult Americans found that only 27% of the elderly thought that the option of euthanasia would decrease trust. This and other studies have shown that members of minorities, the religious, and those with lower education and income were less favorably disposed to euthanasia.

Apprehensions regarding the influence of depression, anomie, and other forms of psychosocial distress on older patients' requests for euthanasia are empirically validated. One research team surveyed

158 patients 60 years and older who were hospitalized for nonterminal illnesses, with and without depression, to assess their attitudes toward euthanasia. The depressed patients who initially supported euthanasia were significantly more likely to reject the option when questioned 6 months later. Greater suffering and poorer subjective health were also correlated with acceptance of euthanasia.

## Euthanasia, Aging, and Public Health

Research showing that members of disadvantaged populations are less likely to support euthanasia reinforces the need for health-care professionals in the public health sector to safeguard the rights of these patients to competent and compassionate end-of-life care. As the population ages, and the birthrate declines, there will be increasing financial and political pressure to control the everspiraling costs of health care through reducing medical expenditures on the elderly, especially those with terminal illnesses, disabilities, and dementia.

The legality and ethicality of euthanasia is a momentous political decision that must be made through informed and deliberate decisions of an entire society, not as a measure of economic expedience. Similarly, data that show a relationship between an older person's experience of unrelieved suffering, perceived burden on their families, and weariness of living mandate equal access of all older persons to the highest quality of palliative care and social support. Conversely, the findings in many surveys that many of the elderly believe euthanasia is an acceptable option at the end of life requires serious consideration if the medical goal of death with dignity for every patient is to be actualized.

## Related Topics

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- ▶ [Death with Dignity Act](#), ▶ [End-of-life care](#),
- ▶ [Physician-assisted suicide](#), ▶ [Rational suicide](#),
- ▶ [Suicide](#)

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# The Exchange Theory of Aging

*Jessica Diggs*

The exchange theory of aging, proposed by James Dowd in 1975, is a social theory that addresses a perceived loss of status and power associated with aging. It is actually derived from a larger theoretical

base known as social exchange theory. Social exchange theory in essence is an economic theory in which the social status of a person is determined by the ratio of rewards to costs associated with interaction with that person. In this context, a reward may be defined as anything actual or perceived that results in the recipient's satisfaction or gratification. Rewards could be in the form of currency, information, goods, services, respect, power, social support, social acceptance, social approval, etc. There are several underlying assumptions that guide this theory. The first is that a person's behavior is in part determined by the person's desire for personal benefit or reward. The second is that activities or interactions that are positively reinforced will continue while activities that do not yield sufficient benefit or rewards will be discontinued. In order for this process to occur people involved in social interactions must have some resources to exchange although the distribution of these resources may be unequal.

In isolation, the ability of this theory to predict behavior is limited because it takes a purely rational and cross-sectional approach to explaining behavior, basically stating that behavior will continue as long as the benefits outweigh the costs. This theory does not address the impact of the context in which the exchange occurs, or how the value or reward may change over time or in a given situation. The availability of alternatives for supplying one's needs may also impact the likelihood of participation in an exchange relationship, independent of the cost to benefit ratio. This theory also lacks consideration of the marginal value of a reward, whereby the relative amount of a reward that an individual has obtained will determine the value of additional reward. Expected rewards may be just as valuable as actual rewards. An illustration of this might be a person who continuously engages in a social relationship that is costly to them in expectation of some future reward or payback. Nonmaterial drivers of behaviors like emotions (love, guilt, self-esteem) are difficult to quantify although they may contribute to the exchange equation.

## Implications for Elders

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In applying this theory to aging individuals, Dowd proposes that aging individuals in industrialized nations lose power and social status due to the



decreasing value of goods and services that they have to exchange with others as they age. Dowd views the elderly as having the least amount of social power based on his belief that aging individuals lose control over their money, knowledge, and other resources that eventually lead them to be economically and socially dependent. This can be due to factors such as mandatory retirement, technological developments and changes over time that may render their skills obsolete, and changes in health status, all of which can limit the ability of the aged to remain socially or financially viable. According to this theory, the elderly will have very limited resources to exchange for valued resources that they need. In terms of bargaining power, the elderly are thought only to have the ability to comply with the wishes of others to offer in the exchange. Because of the decreased resources for exchange among the elderly, the exchange relationship between younger persons and the elderly will decrease, secondary to the unequal exchange process that will make these interactions more costly for the younger person.

Research in this area has shown, however, that many relationships between older and younger generations are bidirectional, whereby the elderly contribute both material and nonmaterial resources to their younger counterparts. These resources may be financial or can also be in the form of work or time, through volunteering, childcare, housework, or offering advice or counsel. As people age, there will be an inevitable change in their relationships, social support networks, and social status; however, it is important for the aging individual and society to focus on what the aging person has to offer (knowledge, wisdom, life experience, time), and to use those resources fully for the benefit of people of all ages.

## Related Topics

- [Coping](#), ➤ [Domestic partnerships](#), ➤ [Emotions](#),
- [Family relationships](#), ➤ [Friendship](#)

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## Exercise

*Jon A. Lehrmann · Jeffrey T. Junig*

Exercise is important to good health, and yet many may hold the erroneous belief that exercise is contraindicated or needs to be severely limited in the elderly. To the contrary, with appropriate planning and precautions the overall benefits of exercise for elders are significant. Still, more than 40% of individuals above 65 do not participate in any leisure-time physical activity.

Exercise is extremely important for physical and mental health. Regular exercise and consequent increased fitness are associated with improved life expectancy overall. Further, exercise has been linked with an improved ability to respond to, and metabolize, glucose, with reduced risk for developing type 2 diabetes mellitus, with improved physical function and decreased risk for developing osteoporosis. Exercise has also been linked with improved mood, better-quality sleep, and a general sense of well-being—particularly important for people in middle and late adulthood because up to 13% of elders meet clinical criteria for major depression. Finally, exercise is an effective outlet and coping mechanism for dealing with stress, and has been shown to decrease anxiety in the elderly.

Aerobic and strength or resistance training are two forms of exercise that are especially recommended for elders and for individuals with chronic diseases associated with aging. Aerobic exercise increases cardiovascular fitness as measured by blood pressure and pulse rate, and improves flexibility, maximum physical exertion levels, mood, and perceived health status. Because advanced age is associated with reduced elasticity and increased muscle stiffness, proper warm-up and stretching prior to exercise are very important and decrease the risk for orthopedic injuries. Cooling down with a slow walk and further stretching is also important after aerobic exercise. Strength or resistance

training is recommended by the American College of Sports Medicine as a component of an overall fitness program for the elderly. Strength training and conditioning are defined as training where the resistance against a muscle set is progressively increased over time. With resistance training, even frail institutionalized elderly men can increase muscle strength and muscle mass, and this form of exercise can help with balance, gait speed, and stair-climbing strength. Resistance training is also associated with increased bone density and energy levels. Women and men often have different preferences for the kind of exercise activities they choose. Women are more likely to engage in aerobics and walk, while men are more likely to compete in team sports, jog, and lift weights.

## Initiating an Exercise Program

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Aging is associated with physical changes that may affect an elder's ability to exercise comfortably and effectively. Lean body mass diminishes with the loss of skeletal muscle mass, and this change may play a role in decreasing an individual's basal metabolic rate. Decreases in muscle mass are often associated with decreases in overall strength and activity levels. In addition, many elders especially in this country do not decrease their calorie intake to match the decrease in metabolism that occurs with aging, and this leads to a disproportionate increase in body fat. Regular exercise can help counter these changes that may adversely affect the health of aging persons.

Before starting a program of exercise, it is important to consider several physical and psychological issues. The American College of Sports Medicine recommends a physician-supervised stress test for those above 50 who intend to begin a vigorous exercise program. Certain individuals should speak with their physician before starting a vigorous exercise program, in particular people who have previously experienced chest pain or who have a history of diabetes, heart disease, high blood pressure, shortness of breath, fractures to wrist, legs, or hips as an adult, unexpected weight loss of more than 10 pounds in the past 6 months, arrhythmias, blood clots, or who have a history of other pulmonary or vascular disease. Their physicians can give guidelines for the initiation of aerobic and strength-training exercise programs.

From a psychological perspective, an individual may deny or minimize how aging may affect his or

her physical performance in exercise. An older person may possess an "internal image" as a much younger person, as measured chronologically. This can lead to a more strenuous approach at the initiation of an exercise program, which in some cases could be harmful. Therefore, a gradual approach during initiation of an exercise program is essential. Once an individual has started exercising, it may be helpful to find a suitable exercise partner or "coach." These approaches have been shown to improve adherence to an exercise program. In choosing the type of exercise activity, an individual should consider the social support systems. It has been reported that individuals who are not married often prefer an exercise activity that involves social interaction. Social support helps decrease loneliness.

In summary, exercise is extremely important in the elderly with proven benefits in strength, function, endurance, and physical and mental health. Care should be taken with the initiation of an exercise program and consultation with a physician is recommended. Strength conditioning and aerobic exercise have been shown to be beneficial, and a balance of strength conditioning with aerobic exercise is often recommended with a fitness program.

## Related Topics

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- ▶ [Anti-aging remedies](#), ▶ [Back pain](#), ▶ [Body fat](#),
- ▶ [Body image](#), ▶ [Body mass index](#), ▶ [Bone strength](#),
- ▶ [Chronic pain](#)

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## Extended Family

*Ingrid Vargas*

The term “extended family” is defined as a network of relatives that includes grandparents, cousins, uncles, aunts, and foster children. The term was used by scholars in the nineteenth and early twentieth century. The complexity of the term can be attributed to various multicultural origins of the American families.

Historically speaking, Americans generally have a nuclear family structure, which is common in Western societies. In Europe, Latin America, the Middle East, and Asia, the extended family is part of the basic family unit. The extended family structure is a modern idea that has evolved over time. An extended family member can be a part of the nuclear family. Elderly family members living with their children are also part of the nuclear family system.

The American family structure has undergone changes in the last three centuries due to shifts in family roles, organizational structure, social values, and the economy. Understanding historical events and family shifts help better understand modern families today. The extended family structure was common in preindustrial societies, in which every family member including extended families came together to work in the agricultural industry. Individuals in both nuclear and extended families relied on each other to help with agricultural tasks. This process brought generations of a family together. However, during the industrialization era, when job opportunities were provided to individual family members, the extended family structure shifted to a nuclear family structure. Family members became wage earners and self-sufficient, and therefore depended less on extended family members. Today, Americans are once again looking and reaching out to extended family members for emotional and financial support

due to the complexities and difficulties associated with single parenting and the economy. Poverty also causes families to share households with extended family members.

An important social concern is the growing need for elderly services such as housing. For safety reasons, elderly persons often cannot live alone, and therefore it is common for the elderly to live with family members or in an assisted living facility. One major concern is the cost of assisted living for the elderly who do not have family financial support. Elderly persons have reported a profound sense of loss in living in such facilities. It is then a necessity for the family to provide shelter and support to their elderly relatives. Extended family members participate in providing the elderly with personal development; daily living tasks such as cleaning, laundry, and shopping; assistance during times of crisis, illness, and in overcoming feelings of alienation. Caring for elderly family members can also provide the family with benefits such as spiritual support, familial storytelling and a sense of history, family counseling, mediation during times of conflict, and cross-generational interactions with young family members.

At times, geographical distance does not allow for families to be engaged in the lives of their elder extended family members and family interactions may be limited and casual. The role of extended family in the aging process is very important because in later life many elderly may begin to lose long-standing social connections like clubs, churches, and the community. This is when the extended family can help the elderly maintain social relationships with the community in the aging process.

## Related Topics

▶ [Social support](#), ▶ [Stress](#)

## Suggested Readings

- Blieszner R, Bedford VH (1995) *Handbook of aging and the family*. Greenwood Press, Westport, CT
- Burton LM, Dilworth-Anderson P (1991) The role of extended family in minority families. *Marriage Fam Rev* 3:1–3
- Surdarkasa N (2001) Conception of motherhood in nuclear and extended families, with special reference to comparative studies involving African societies. *J Culture Afr Wom Stud* 5:3
- Woehrer C (1982) The influence of ethnic families and intergenerational relations. *ANNALS, APPSS* 464:76–77

## Eye Care

*Monique A. Anawis*

With age, routine eye examinations are necessary. Selecting the appropriately trained professional is critical to obtaining proper eye care. The ophthalmologist is a medical doctor trained to recognize eye diseases and the complications of medical conditions such as diabetes and high blood pressure. With this expertise, the ophthalmologist may be the first physician to diagnose diabetes because of typical findings that he or she may observe in the retina. The ophthalmologist also monitors complications or side effects of medications affecting the eye. Ophthalmologists treat ocular conditions, perform surgical and laser operations, prescribe medications and eyeglasses, and fit contact lenses. The ophthalmologist must be licensed to practice medicine in the state in which he or she practices. The internist or primary care physician works closely with the ophthalmologist and other specialists to provide comprehensive care and prevent illness.

Optometrists and opticians provide a different type and level of services compared to ophthalmologists. Optometrists are concerned with defects in the eyes' ability to see that are due to refractive problems including near-sightedness, far-sightedness, and astigmatism. Eyeglasses, contact lenses, and other vision aids are prescribed by optometrists, as well as by ophthalmologists. Some states allow optometrists to prescribe a limited number of medications. Optometrists are not trained or allowed to perform surgical, laser, or other interventional procedures. A few states in controversial decisions are considering allowing optometrists to perform procedures, a policy that has met with obvious criticism and concern. Optometrists must be licensed by the state in which they practice. Opticians make, fit, and sell optical devices, particularly eyeglasses that have been prescribed by ophthalmologists or optometrists.

An annual ophthalmologic examination is recommended after age 50. Many conditions affecting the entire body may cause complications evident in the eyes and need monitoring at a younger age. Diabetes mellitus requires, at minimum, an annual ophthalmologic examination including a detailed evaluation of the retina following instillation of dilating eye drops. Patients with diabetes are at increased risk of developing

cataracts, glaucoma, and typical changes in the retina. The longer a patient has had diabetes mellitus, the more likely it is that eye complications will occur. High blood pressure, particularly when poorly controlled, may cause changes in the body's blood vessels including those of the eye. Ocular complications in high blood pressure and diabetes often have no symptoms, and therefore require routine ophthalmologic examinations.

Medications necessary to treat medical conditions may have side effects and cause complications in the eye. Periodic ophthalmologic examinations looking for anatomic changes in the eye and noting patient symptoms may result in lowering the dose or recommending that the prescribing doctors discontinue the use of certain medications. Although side effects accompany many medications, the more frequent types of medications causing complications are those used for arthritic joint complaints and breathing problems including asthma and emphysema. Medications should never be discontinued without first checking with the prescribing physician.

In addition to monitoring diseases of the entire body and complications of medications, ophthalmologic examinations evaluate diseases specific to the eye. With age, the incidence of glaucoma, cataracts, and macular degeneration increases. Certain eye conditions that may run in families, including glaucoma and macular degeneration, should be monitored at a much younger age. Knowing as much as possible about ocular and medical conditions of blood relatives of the patient helps the physician determine the likelihood of familial diseases and the approximate age at which they may occur.

Glaucoma is a group of eye diseases in which the eye pressure is high. Many types of glaucoma have no symptoms; therefore, annual examinations are important.

Cataracts are the result of aging of the eye's natural lens. Once the lens has enlarged and changed so that it becomes clouded, it is called a cataract. Clouding of different parts of the lens gives rise to different types of cataracts. Smoking, sun exposure, and diabetes are associated with cataract formation.

Age-related macular degeneration (ARMD) is a disease of the center of the retina called the macula. ARMD is the most common cause of irreversible blindness in Western populations in patients above 50. Risk factors for developing ARMD include advanced age, family history, and race (Caucasian).

Smoking and heavy alcohol consumption, particularly of beer, is associated with an increased risk of having advanced ARMD.

Potentially modifiable risk factors have become increasingly important in treating ARMD. High blood pressure, smoking, and increased body mass are all known risks of ARMD which can be modified. The Age-Related Eye Disease study (AREDS) and other ongoing research programs have provided valuable additions to laser, intravenous light-activated medications, and surgical treatments. Antioxidants (vitamins C and E and beta-carotene) and zinc delay the progression from intermediate to advanced ARMD but do not prevent development of ARMD. Although several supplements purporting to be of benefit to the eyes are on the market, only supplements using the dosage and combination of supplements used in the AREDS should be used. AREDS supplements should only be started when recommended by the ophthalmologist and not while concurrently smoking. The primary care physician should be notified when AREDS supplements and any other vitamins or herbal medications are used. Patients should also be careful in combining AREDS supplements with multivitamins to avoid toxicity. Physicians should be consulted regarding doses of vitamins and herbal medications because these can potentially interact with prescription and over-the-counter medications to cause complications.

Lifestyle and preventive care have an increasingly important role in ocular health. Sun exposure is correlated to skin cancer, cataracts, and pterygia. Pterygia are scars that form in the white of the eye and extend to the cornea and represent a sun-related tissue damage seen in people who work extensively outdoors. Use of proper sunglasses, a wide-brimmed hat, and sunscreen have been of benefit in preventing these conditions. While standards vary for sunglasses, general guidelines recommend using large-size sunglasses with side protection, less than 1% transmittance of both UVA and UVB rays, and gray or near neutral color lenses of good optical quality. Store-purchased sunglasses may not

provide written quality guarantees or specificity of sun protection. Opticians, therefore, may provide greater guidance in selective sunglasses of high quality, adequate sun protection, and comfort for sports and leisure.

Significant ocular side effects have been documented in the literature and the National Registry of Drug-Induced Side Effects for canthaxanthine, *Echinacea purpurea*, *Ginkgo biloba*, *Datura*, licorice, niacin, and vitamin A. Future research may support the use of other supplements or herbal medications. Until that time, supplements, herbs, and alternative medications and treatments should be used with the knowledge, and under the guidance, of a physician.

Eye health begins by obtaining routine eye examinations to screen for glaucoma and complications of systemic diseases including diabetes. Eye health continues throughout life by eating a balanced diet, maintaining appropriate weight for one's height, age, and gender, exercising regularly with the approval of a physician, controlling diabetes and high blood pressure, and using supplements as needed. Sun protection, smoking cessation, and limiting alcohol intake are also keys to having healthy eyes and a healthy body.

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## Related Topics

- ▶ Blindness, ▶ Cataract, ▶ Diabetes, ▶ Diet,
- ▶ Glaucoma, ▶ Smoking, ▶ Vision

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## Suggested Resources

- American Academy of Ophthalmology. [www.aaopt.org](http://www.aaopt.org)  
Association for Macular Diseases, 201 E. 64th St., New York 10021,  
(212) 605-3719  
National Diabetes Education Program. [www.ndep.nih.gov](http://www.ndep.nih.gov)  
National Eye Institute and National Eye Health Education Program.  
[www.nei.nih.gov](http://www.nei.nih.gov)

