

---

# Diet

---

**There are other diet-related diseases besides those caused by vitamin and mineral deficiencies as discussed in the Toxic or Not module.**

**T**he lifestyle factors that affect health are the behaviors of the person. Behavioral activities such as cigarette smoking, excessive alcohol intake and an unbalanced diet help to determine a person's health.

## Nutrition & Exercise

One billion people across the world are now overweight or obese, leading to fears that obesity will rapidly overtake smoking tobacco as the leading lifestyle risk factor for heart disease and stroke.

Overweight usually refers to an excess in body weight compared to certain standards. This excess weight could be due to an excess in muscle mass, bone, fat and/or body water. Obesity, however, refers to an abnormal excess in body fat. A person can be overweight but not obese, as in the case of an athlete or body builder with a lot of muscles. However most people are overweight due to obesity.



# Diet

A quick and handy way to find out if someone is overweight or obese is by calculating the Body Mass Index or BMI. BMI is a measure based on height and weight and is not gender-specific. Someone with a BMI of 30 or higher is usually considered to be obese. Try the BMI calculator at (<http://www.nhlbisupport.com/bmi/>)<sup>3</sup>.

Although obesity may have *some* **genetic influence**, your genes alone don't determine whether you are obese except for some rare cases. Your daily decisions such as poor eating habits and physical inactivity are major contributing factors to obesity.

A sedentary lifestyle is defined by the Centers for Disease Control and Prevention as "less than three twenty minute sessions of leisure time physical activity per week". Obesity contributes to many health risks such as high blood pressure, type II diabetes, heart disease, stroke, respiratory problems, cancer and psychological disorders.

The following table summarizes the relative risk of health problems associated with obesity:

<b>Greatly Increased (Relative Risk &gt; 3)</b>	<b>Moderately Increased (Relative Risk 2 - 3)</b>	<b>Slightly Increased (Relative Risk 1 - 2)</b>
Diabetes mellitus	Coronary heart disease	Cancer
Hypertension	Osteoarthritis (Knees)	
Sleep apnea	Hyperuricemia and gout	

Source: Björntorp, P. International Textbook of Obesity, 2001

# Diet

## Diseases Related to Obesity

Disease	Summary	Symptoms
<p><b>Diabetes mellitus</b></p> <p><a href="#">Learn more . . .</a></p>	<p>A disease that effects the bodies metabolism. The body loses its ability to absorb glucose into cells. Glucose is used for energy in the body so when it can't be absorbed the the body doesn't have any energy. A person can either be born with diabetes (type I), which is genetic, or they can get it after birth, caused by obesity, physical inactivity or other factors.</p>	<p>Increased thirst and urination, constant hunger, weight loss, blurred vision, and extreme fatigue, frequent infections, and slow healing of wounds or sores.</p> <p><b>A life-threatening diabetic coma can occur if untreated</b></p>
<p><b>Hypertension (high blood pressure)</b></p> <p><a href="#">Learn more . . .</a></p>	<p>A condition where a persons blood pressure is persistently higher than normal which puts stress on blood vessels, arteries and veins with every beat of the heart. There is no direct cause for high blood pressure but lack of physical activity, obesity, a diet high in fats and cholesterol, stress, smoking, and drinking alcohol can be contributing factors.</p>	<p>Increased risk of heart attack, stroke, and kidney failure.</p> <p><b>All are life-threatening</b></p>
<p><b>Sleep apnea</b></p> <p><a href="#">Learn more . . .</a></p>	<p>A sleeping disorder where the person stops breathing for periods of time while sleeping. Breathing stops either because the soft tissue in the back of the throat collapses, the brain fails to signal the muscles to breath, or both. Risk factors include being male, overweight, or over the age of 40, but it can strike anyone at any age.</p>	<p>High blood pressure and other cardiovascular diseases, memory problems, weight gain, impotency, and headaches.</p> <p><b>Normally not deadly but the side effects can be life-threatening</b></p>
<p><b>Coronary heart disease</b></p>	<p>The narrowing of the arteries in the heart. Risk factors are obesity, physical inactivity, high blood pressure and cholesterol.</p>	<p>Heart attack, angina pectoris (chest pain) or both.</p>

<a href="#">Calculate your risk</a>		<b>Death by heart attack</b>
<b>Osteoarthritis (Knees)</b> <a href="#">Learn more . . .</a>	A degenerative joint disease that is the break down of cartilage in the joints causes bone to rub on bone and pain. Risk factors are obesity (because the knees have to support more weight so they are constantly under strain), age, genetics, injuries and diet.	Pain and swelling in the joints <b>Isn't life-threatening</b>
<b>Hyperuricemia and gout</b> <a href="#">Learn more . . .</a>	The build up of uric acid crystal deposits in joints. Risk factors are obesity, weight gain, alcohol intake, high blood pressure, abnormal kidney function, drugs, dehydration, injury, and recent surgery	Pain and swelling in the joints <b>Isn't life-threatening</b>
<b>Cancer</b> <a href="#">Learn more . . .</a>	When the DNA in a cell gets damaged beyond repair and begins to grow out of control. When the abnormal cells divide, they produce more abnormal cells. These abnormal cells create tumors which can cut off circulation to surrounding areas and cause damage that leads to serious symptoms. Risk factors included age, sex, genetics, tobacco and alcohol use, diet (leads to obesity), and sun exposure.	Cancer has a large number of different symptoms depending on where it is in the body, how big it is, and what tissue it's in. They range from minor bumps or spots to death. <b>Death can be from a wide variety of causes</b>

# Drugs

## Substance Abuse (Tobacco)

**Smoking tobacco** is the number one cause of preventable death in the United States. Nearly one fourth of the people in this country smoke. *The most common and serious effect of smoking is lung cancer. Lung cancer is the leading cause of death due to cancer in the US.* In addition to lung cancer, smoking predisposes individuals to cancers of the larynx, pharynx, mouth, esophagus, pancreas, bladder and cervix<sup>4</sup>. Smoking also increases susceptibility to respiratory diseases such as *emphysema (click on the link below)*, chronic bronchitis, pneumonia and asthma.

*Ever heard of the smoker's cough?*

*Do you know that all smokers will develop emphysema if they live and smoke long enough?*



Healthy Lung



Smoker's Lung

# Drugs

## Substance Abuse (Tobacco, page 2)

**Smoking** not only harms the people who use tobacco, but also causes the people around them to be passive smokers. Passive smoking increases the risk of succumbing to the same diseases as "active" smokers. Children are more susceptible to ill effects from passive smoking. Middle ear infections, coughing and wheezing are the more common effects found in children exposed to cigarette smoke<sup>5</sup>.

Since 1975, cigarettes have been the substance most often abused by high school students in the US. While the incidence of smoking is higher among men than women in general, the rates of tobacco use among teenage girls is increasing. The following table reveals the extent of tobacco use among teens in the US as of 2002:

<b>Cigarette Use by Students, 2002</b>			
	<b>8th Grade</b>	<b>10th Grade</b>	<b>12th Grade</b>
<b>Ever Smoked</b>	31.4%	47.4%	57.2%
<b>Smoked in Past Month</b>	10.7%	17.7%	26.7%
<b>1/2 Pack + per Day</b>	2.1%	4.4%	9.1%

(Source: Monitoring the Future Study, The University of Michigan, <http://www.monitoringthefuture.org/data/data.html>)

# Alcohol

## Substance Abuse (Alcohol)

While its consumption by adults is commonly considered a socially acceptable practice, it should be remembered that alcohol is a potentially lethal toxin. "Alcohol is the most broadly toxic substance legally on the market for internal consumption, and is far more toxic than many substances currently banned or restricted by the FDA"<sup>6</sup>. Alcohol toxicity can be classified as either acute (short term) or chronic (long term).

**Acute alcohol toxicity** occurs when large amounts of alcohol are consumed within a short amount of time. While the liver has the ability to detoxify alcohol and other harmful substances, if the rate of alcohol consumption exceeds the rate of detoxification by the liver the excess alcohol causes intoxication. Alcohol impairs the brain and as the concentration of alcohol increases in the body it can cause depression, respiratory arrest (you stop breathing), coma (you turn into a vegetable) and finally, death.

<b>Alcohol Use by Students, 2002</b>			
	<b>8th Grade</b>	<b>10th Grade</b>	<b>12th Grade</b>
<b>Any Use</b>	47.0%	66.9%	78.4%
<b>Been Drunk</b>	21.3%	44.0%	61.6%

(Source: Monitoring the Future Study, The University of Michigan)

# Alcohol

## Substance Abuse (Alcohol, page 2)

**Chronic alcohol toxicity** occurs as a result of prolonged, heavy drinking (an average of three or more servings of alcohol per day). Chronic heavy drinking are susceptible to alcoholism, cirrhosis of the liver, kidney disease, pancreatitis, brain damage, ulcers, malnourishment, increased blood pressure and various types of cancer<sup>7</sup>.



Healthy Liver



Liver Cirrhosis

**Fetal Alcohol Syndrome** occurs when a pregnant women drinks alcohol, causing their developing child to drink as well. Exposure of the fetus (the developing baby still inside its mother is called a fetus) to alcohol may cause Fetal Alcohol Syndrome, the leading known cause of mental and physical birth defects. Defects include brain damage, facial deformities, growth deficits, heart, liver, and kidney defects also are common, as well as vision and hearing problems. Individuals with FAS have difficulties with learning, attention, memory, and problem solving. As many as 12,000 infants are born each year with Fetal Alcohol Syndrome<sup>8</sup>.

# Illegal Drugs

## Substance Abuse (Illegal Drugs)

**Marijuana** is the most commonly used illegal drug in America. In a 2001 survey, over 12 million Americans over the age of 11 had used marijuana at least once in the month prior to the survey<sup>9</sup>.



Health effects from marijuana use are profound. It affects the brain by distorting perception, inhibiting thinking and problem solving and interfering with coordination. Marijuana dramatically increases the risk of heart attack and, like cigarette smoking, causes respiratory problems such as coughing, infections, and lung cancer<sup>9</sup>.

**Cocaine and heroin** abuse is also problematic, not only among American teenagers, but among teens world-wide. The following tables display data from 2002 on the prevalence of cocaine and heroin abuse among US teens:

### Cocaine Use by US Students, 2002

	8th Grade	10th Grade	12th Grade
Ever Used	3.6%	6.1%	7.8%
Used in Past Year	2.3%	4.0%	5.0%
Used in Past Month	1.1%	1.6%	2.3%

# Illegal Drugs

## Substance Abuse (Illegal Drugs, page 2)

### Heroin Use by US Students, 2002

	8th Grade	10th Grade	12th Grade
Ever Used	1.6%	1.8%	1.7%
Used in Past Year	0.9%	1.1%	1.0%
Used in Past Month	0.5%	0.5%	0.5%

Abuse of cocaine and heroin causes damage to multiple organs, i.e.:

- Skin infections: skin abscesses and cellulites
- Respiratory disorders: difficulty breathing and accumulation of fluid and pus in the lungs
- Immune system: increased risk of HIV and Hepatitis B infections
- Cardiovascular system: Hypertension, stroke, sudden cardiac arrest and death<sup>10</sup>

**Addiction** is a problem commonly associated with all forms of substance abuse. In some cases it only takes one or two exposures to substances such as tobacco, alcohol or illegal drugs before physical and psychological dependencies begin to develop. These addictions are extremely difficult to overcome and many people never succeed in freeing themselves of these self-destructive behaviors.

## Risk Taking Behavior

**Risk taking behavior** by an individual puts his or her healthy lifestyle under enormous risk. An individual may have a personality for aggressive or self-abusive behavior and may indulge in:



1. **Impaired driving** - driving while under the influence of drugs or alcohol. *During 2002, 17,419 people in the U.S. died in alcohol-related motor vehicle crashes, representing 41% of all traffic-related deaths (NHTSA 2003a).*  
Visit <http://www.cdc.gov/ncipc/factsheets/driving.htm> for more interesting facts and information.
2. **Driving over the speed limit.** This may make people susceptible to road accidents, which are on the rise in the United States.
3. **Adventure sports** and activities such as bungee jumping, mountain climbing or white water rafting.
4. **Self-abusive behaviors** such as excessive body piercing, tattooing and eating disorders.

*(These are just a few of many examples of risk taking behavior)*

# Risk Taking Behavior

## Hazardous Occupations

Many occupations require frequent risk taking as part of the job. Choosing a safe occupation can significantly decrease your chance of injury or death. The following table from the US Department of Labor lists the ten most dangerous jobs in America and the leading cause of death for each job.

### THE 10 MOST DANGEROUS JOBS

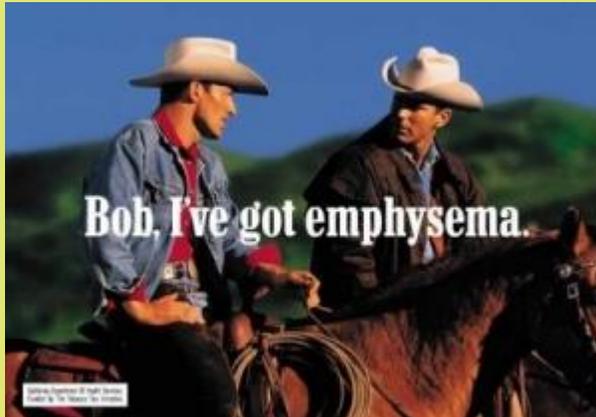
Occupation	Leading Cause of Death
1. Timber Cutters	Struck by Object
2. Fishermen	Drowning
3. Airplane Pilots	Airplane Crashes
4. Structural Metal Workers	Falls
5. Drivers-Sales Workers	Vehicular accidents
6. Roofers	Falls
7. Electric Power Installers/Repairers	Electrocution
8. Farm Occupations	Vehicular accidents
9. Construction Workers	Vehicular accidents, Falls
10. Truck Driver	Highway Crashes

Source: Bureau of Labor Statistics; survey of occupations with minimum 30 fatalities and 45,000 workers in 2002

**HEY!!** Did you know that motorcycle couriers in London (England) and explosive ordinance detonators are considered to be the two most dangerous jobs in the world?!

# Appendix

## Emphysema



**E**mphysema is a disease of the lungs. It is caused by a chemical imbalance, caused from smoking in most cases, that leads to the over-inflation of air sacs (alveoli) in the lungs. Alveoli are responsible for transferring oxygen in the air into the blood. Damage to them is irreversible and results in permanent "holes" in the tissues of the lower lungs. The damaged alveoli cause a shortness of breath. People with emphysema

have a hard time exhaling and normally have trouble performing their daily activities such as a short walks because they get out of breath so easily. In extreme cases the person has to carry around an oxygen tank with them to aid in breathing.

***Every smoker will eventually develop emphysema if they smoke long enough.*** Emphysema is caused by years of exposure to irritating fumes and air pollution, the main cause being smoking. Symptoms include shortness of breath, a chronic cough, bluish skin color, wheezing, dizziness, stress, impotence, fatigue, impaired ability to concentrate, and difficulty falling asleep.



## Genetics

**Genes control everything in your body. Some genes control the color of your hair while others determine how susceptible you are to certain diseases such as cancer, obesity, Parkinson's disease, alzheimer's disease and more.**

**Genes are specified sequences of [DNA](#) and everyone has variations in their DNA sequences that make them different from everyone else. Some of these variations allow cancers and other diseases to occur much easier than normal. The individuals with the appropriate genes are at a much higher risk for the disease than other people.**

**Presently, there isn't anyway to tell which individuals have a higher risk than others except by looking at relatives. You received half of your genes from your mom and half from your dad, and each of your parents received half of their genes from their mom and half from their dad, and so on. So by looking at whether your family members have had certain diseases it is possible to predict what your chances are of getting the disease. There are specialists who you can visit and they can tell you what your chances are of developing a disease. These people are called **Genetic Counselors**.**

**To learn more about Genes and their diseases [click here](#).**

## References

1. National Institutes of Health's National Center for Biotechnology Information - Genes & Disease - <http://www.ncbi.nlm.nih.gov/disease/Obesity.html>

2. The American Council on Science and Health - The Irreversible Health Effects of Cigarette Smoking - <http://www.acsh.org/publications/booklets/iesmoke.pdf>
3. BMI calculator - <http://nhlbisupport.com/bmi/>
4. Cigarette Smoking as a Cause of Cancer, Cancer Rates and Risks, Surveillance, Epidemiology, and End Results (SEER) Statistical Publications, National Cancer Institute - <http://seer.cancer.gov/publications/raterik/risks67.html>
5. Smoking: Facts and Tips for Quitting, Tobacco Control Research, National Cancer Institute - [http://dccps.nci.nih.gov/TCRB/Smoking\\_Facts/facts.html](http://dccps.nci.nih.gov/TCRB/Smoking_Facts/facts.html)
6. Wayne State University, Department of Biological Sciences, Toxicity - <http://sun2.science.wayne.edu/~bio103/toxicity.html>
7. The University of Queensland, Mayne Medical School, Department of Molecular and Cellular Pathology, Alcohol Related Pathology - <http://www.som.uq.edu.au/Pathology/teaching/yearThree.html>
8. National Organization on Fetal Alcohol Syndrome, What is Fetal Alcohol Syndrome? - ([www.nofas.org](http://www.nofas.org))
9. National Institute on Drug Abuse, NIDA InfoFacts, Marijuana - <http://www.nida.nih.gov/Infobox/marijuana.html>
10. Kaplan, Pathology, USMLE Step 1 Preparation Book, 2002
11. Genes and Disease, National Institute of Health - <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..ShowSection&rid=gnd.section.232>
12. American Council on Science and Health - <http://www.acsh.org/publications/booklets/iesmoke.pdf>

### **Photo credits**

1. Working Out Apple: San Francisco State University Student Health Service (<http://www.sfsu.edu/~shs/dpm/wellness.htm>)
2. Drug-free Zone: The Public School Parent's Network (<http://www.psparents.net/SubstanceAbuse.htm>)

3. Lungs: PresMark Publishing Co. (<http://www.presmark.com/htmlfile/pictures.htm>)

4. Liver: University of Utah, Health Sciences Library (<http://www-medlib.med.utah.edu/WebPath/LIVEHTML/LIVERIDX.html#1>)