saturated fat and cholesterol, maintaining a healthy weight, and participating in regular physical activities. Saturated fats can be found in foods such as meats, dairy products, and vegetable oils. Unfortunately, there are certain factors affecting your cholesterol level that are beyond your control. Examples include increasing age, postmenopausal status in women, and genetic factors. In some instances, drug treatment can be used to supplement cholesterol-lowering lifestyle changes.

Is it possible to lower my cholesterol level?

Sure! The build-up of cholesterol in the arteries can be slowed or decreased by lowering of the cholesterol level. The National Heart, Lung, and Blood Institute reported a decrease in the U.S. average blood cholesterol level between 1978 and 1990 from 231 mg/dL to 205 mg/dL. The total cholesterol level can be reduced or maintained by reducing the consumption of

<table>
<thead>
<tr>
<th>Table 1. Cholesterol Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Desirable</td>
</tr>
<tr>
<td>Borderline</td>
</tr>
<tr>
<td>Undesirable</td>
</tr>
</tbody>
</table>

## Cold and Flu Facts

As we head towards cooler temperatures we should also prepare for cold and influenza season. This is because time spent indoors results in more contact with other people, and hence a higher chance of infection by the cold and flu viruses. Dry air also dries nasal passages, causing them to be more susceptible to these viruses.

Both the common cold and the flu may last up to 14 days. However, the flu has more severe potential complications than the common cold. Drinking plenty of fluids and getting lots of rest is still the best treatment for both illnesses. Over the counter remedies (e.g., ibuprofen, nasal decongestants) can also be used to ease symptoms of the cold and flu. The use of antibiotics by cold and flu sufferers is only warranted when secondary bacterial infections develop. Antibiotics are not effective against the cold virus and have the unintended consequence of breeding resistant strains of bacteria. Currently, antiviral medication against influenza is available. However, these antivirals help only when taken within 48 hours of illness. If the symptoms have not abated in 3 days, a visit to the doctor is recommended to treat any secondary bacterial infections that may have developed.

Some steps to avoid the common cold and flu include:

- Washing hands frequently
- Avoiding crowds
- Getting adequate sleep
- Drinking plenty of fluids
- Eating a balanced diet

## Smoking Prevalence of LSAH Participants

### Figure 1. Smoking Data of LSAH Participants, 1995-1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence of LSAH Participants (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>25.0</td>
</tr>
<tr>
<td>1996</td>
<td>24.1</td>
</tr>
<tr>
<td>1997</td>
<td>24.0</td>
</tr>
<tr>
<td>1998</td>
<td>23.8</td>
</tr>
<tr>
<td>1999</td>
<td>23.5</td>
</tr>
</tbody>
</table>

## Asthma

Asthma is a chronic respiratory condition characterized by the inability to breathe properly. When a person inhales, air passes into the lungs; the lungs contain millions of small airways called bronchioles. When allergens or other irritants are inhaled, smooth muscles in the bronchioles constrict and narrow. People without asthma breathe in deep breaths, allowing the lungs to expand and fill with air. Asthma treatments aim to reduce inflammation and protect the airways from narrowing and to improve airflow. Asthma can range from mild to severe, and it is often managed with a combination of medications and lifestyle changes. It is important to consult with a healthcare provider for an accurate diagnosis and personalized treatment plan.

For your information

**...and ours**

If you have a new address or phone number, please let us know by calling (281) 244-5195 or (281) 483-7999. You may also write us at: Longitudinal Study of Astronaut Health Flight Medicine Clinic/SD4 Johnson Space Center/NASA 2101 NASA Road 1 Houston, Texas 77058-2696 or e-mail us at: nmwear@ems.jsc.nasa.gov

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Have You Had Your Cholesterol Checked Recently?

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Magazine articles and news reports galore emphasize the importance of having your cholesterol checked and getting it to a medically safe level. Here are some guidelines to give you the basic tools needed to arm yourself in the fight against high cholesterol levels and cardiovascular disease.

What is cholesterol? Cholesterol is a waxy substance found throughout the body. It is used to make cell membranes, some hormones, and vitamin D. The liver makes all of the cholesterol the body needs. Additional cholesterol is taken in through food consumption.

Why is the cholesterol level important? The cholesterol level is important because increased levels have been associated with the development of coronary heart disease (CHD). Cholesterol buildup causes hardening and narrowing of the arteries. This decreases the flow of blood and oxygen supplied to the heart, which can result in chest pain and/or heart attack. CHD is the leading cause of death for both men and women in the United States with an estimated attributable 500,000 deaths per year. The American Heart Association (AHA) predicts that nearly $300 billion will be spent in 2001 to cover direct and indirect costs of cardiovascular diseases and stroke in the U.S.

How do I check my cholesterol level? Adults age 20 and older should have their cholesterol levels checked at least once every five years. This can be done by consulting your personal physician.

A common blood test used is the lipoprotein profile, which gives the levels of total cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL), and triglycerides. Most of your total cholesterol level as well as the HDL level is important because the total cholesterol level gives a general idea about the overall cholesterol level. HDL, or "good" cholesterol, helps keep cholesterol from building up in the arteries; therefore, a high level is desirable. LDL is the primary source of cholesterol buildup in the arteries. Triglycerides are another form of fat found in the blood.

continued from page 1

Figure 2. Smoking Trends of LSAH Participants and U.S. General Population

continued from page 4

they have trouble breathing normally. Inflammatory Response In this stage, the immune systems respond by delivering white blood cells and other immune factors to the airways. This causes the airways to swell, fill with fluid, and produce a thick sticky mucus. The classic symptoms of an asthma attack are wheezing, shortness of breath, and a phlegmy cough. In a severe attack, breathing may become shallow, the lips and skin turn bluish, and the person may begin to lose consciousness.

Asthma affects 5% to 10% of the world’s population, and more than 70 million Americans have asthma. The elderly and urban poor are at the highest risk for severe asthma and death. Highly trained athletes such as long-distance runners and swimmers are more susceptible to asthma. For example, 30% of U.S. athletes in the 1996 Olympics had asthma. Occupational exposures to a wide range of chemicals and other substances may increase the risk of asthma. Obesity and asthma have been associated, but it is not clear if one causes the other.

In a 2000 survey of the U.S. general population, 7.2% of the respondents reported having asthma (Table 1). In comparison, the prevalence rate among LSAH participants and compared to their medical records is lower: less than 4% of comparison participants were prevalence rate among astronauts as documented in their medical records is lower: less than 4% of comparison participants were allergic asthma, but it is not dangerous and does not require hospitalization. EIA occurs most commonly during intense exercise in cold dry air.

Adult-onset asthma may be caused by respiratory infections with organisms such as Chlamydia pneumoniae, Mycoplasma pneumoniae, adenoviruses, and respiratory syncytial virus. Some studies suggest that antibiotic treatment in childhood is associated with development of adult-onset asthma. Other possible causes of asthma include hormone fluctuations, gastroesophageal reflux disease, sinus abnormalities, and sinusitis.

Allergic Asthma In people who have allergic asthma, airborne allergens or other triggers start a cascade of events in the immune system that lead to inflammation and hyperreactivity in the airways. These allergens include animal dander, pollen, molds, feathers, and cockroaches. About 5% of people with asthma may have attacks induced by food allergies. The most common causes of food allergy-induced attacks are monosodium glutamate (MSG) which is found in canned soups, cheese, and other processed foods. These medications to open airways rapidly when symptoms of an asthma attack occur. An acute asthma attack may require hospitalization. Reactive treatments involve use of quick-relief medications to open airways frequently when symptoms of an asthma attack occur. Although asthma is a serious condition, patients who self-manage their asthma have fewer hospitalizations, and a better quality of life than those who rely on emergency visits to a physician or hospital to control symptoms.

Are you wondering which medications you should take for you asthma? table 1

Table 1. Prevalence of Asthma Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Astronauts (N=312)</th>
<th>Comparison Participants (N=929)</th>
<th>U.S. General Population* (N=181,914)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>2 (0.64%)</td>
<td>36 (3.9%)</td>
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Asthma 2 (0.64%) 36 (3.9%) (7.2%)

*Figures are age-adjusted to the 2000 U.S. population.
You have had your cholesterol checked lately?

Cholesterol is a waxy substance found throughout the body. It is used to make cell membranes, some hormones, and vitamin D. The liver makes all of the cholesterol the body needs. Additional cholesterol is taken in through food consumption.

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The cholesterol level is important because increased levels have been associated with the development of coronary heart disease (CHD). CHD is the leading cause of death for both men and women in the United States with an estimated 500,000 deaths per year. The American Heart Association (AHA) predicts that nearly $300 billion will be spent in 2001 to cover direct and indirect costs of cardiovascular diseases and stroke in the U.S.

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In general the smoking prevalence in the general population is much lower than that of the LSAH participants. However, the difference in prevalence of LSAH participants indicates that their trendlines are not as broken down into cohorts, the results suggest that more comparison participants never started smoking at a higher rate as compared to the astronomers and general population.

If they have trouble breathing normally. Inflammatory Response

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In a 2000 survey of the U.S. general population, 7.2% of the respondents reported having asthma (Table 1). In comparison, the prevalence rate among LSAH participants and general population was 1989.

How serious is asthma? Asthma can be a debilitating chronic disease, although it may have long periods of remission. Despite an increase in the U.S. death rate from asthma between 1977 and 1994 (from 0.5 to 1.2 per 100,000 in whites and from 1.5 to 3.7 per 100,000 in African Americans), death from asthma is rare when the disease is properly treated. In mild to moderate cases, asthma may progress over time, and many adults become symptom free. However, in severe persistent cases (about 10%), progressive decrements in lung function may occur even in patients who receive aggressive treatment.

Treatment There are two types of basic treatments for asthma, preventative and reactive. Preventive elements include avoiding exposure to known allergens, home monitoring of lung function, and long-term control medications. Long-term control medications (bronchodilators and corticosteroids) are taken regularly to prevent or reduce inflammation in the airways. These medications decrease the risk of having an asthma attack. Reactive treatments involve use of quick-relief medications to open airways rapidly when symptoms of an asthma attack occur. An acute asthma attack may require hospitalization, and does not require hospitalization. EIA, and some have both types of allergic asthma. Some people have allergic asthma, some have EIA, and some have allergic asthma. For example, 10% of U.S. swimmers are more susceptible to asthma. For example, 10% of U.S. adults age 20 and older should have their cholesterol levels checked at least once every five years. This can be done by consulting your personal physician.

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Cold and Flu Facts

As we head towards cooler temperatures we should also prepare for cold and influenza season. This is because time spent indoors results in more contact with other people, and hence a higher chance of infection by the cold and flu viruses. Dry air also dries nasal passages, causing them to be more susceptible to the viruses.

Both the common cold and the flu may last up to 14 days. However, the flu has more severe potential complications than the common cold. Drinking plenty of fluids and getting lots of rest is still the best treatment for both illnesses. Over the counter remedies (e.g., ibuprofen, nasal decongestants) can also be used to ease symptoms of the cold and flu. The use of antibiotics by cold and flu sufferers is only warranted when secondary bacterial infections develop. Antibiotics are not effective against the cold virus and have the unintended consequence of breeding resistant strains of bacteria. Currently, antiviral medications against influenza are available. However, this rate seems to have reached a plateau in the 1990's, where it has hovered around the mid-20% percent mark.

Some data on the smoking prevalence of LSAS particpants have been obtained through the Lifestyle Questionnaire. This survey was also completed in 1995 and sent to all astronauts and comparison participants enrolled in the study, and has been sent to subsequent classes upon their selection into the study. The data gathered from 1995 to 1999 include smoking data on 217 astronauts and 776 comparison participants from a total of 271 astronauts and 915 comparisons at that time. The survey asks whether the respondent has ever smoked, and whether the respondent is currently smoking. Of the astronauts who responded, 16.1% of them ever smoked and 1.4% were still smoking while the values for the general population not only did a lower percentage of astronauts start smoking, but also that a much lower percentage of them continued to smoke. The behavior is expected because of their higher health awareness as compared to that of the general population. More surprising are the low prevalences of ever smoked

For your information

If you have a new address or phone number, please let us know by calling (281) 244-5195 or (281) 483-7999. You may also write us at: Longitudinal Study of Astronaut Health Flight Medicine Clinic/SD4 Johnson Space Center/NASA 2101 NASA Road 1 Houston, Texas 77058-3696 or e-mail us at: mwear@ems.jsc.nasa.gov

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Asthma

Asthma is a chronic respiratory condition characterized by the inability to breathe properly. When a person inhales, air passes into the lungs; the lungs contain millions of small airways called bronchioles and narrow. People without asthma breathe in deeply to relax the airways and remove the irritant from the lungs. However, when people with asthma try to take deep breaths, their airways do not relax, and

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What should my cholesterol level be?

Table 1 gives the current standards used to classify cholesterol levels. Of the 240 NASA astronauts receiving physical exams in 2000, 23 (9.6%) had at least one exam with an undesirable total cholesterol level. 78 astronauts (33%) had borderline total cholesterol levels. Regarding HDL, 36 (15%) of the same 240 astronauts had undesirable HDL levels. 134 (56%) had borderline HDL levels. However when total cholesterol and HDL levels were examined together, none of the astronauts had undesirable levels for both values. For the U.S. general population, estimates by the AHA show that over 60 million U.S. adults (20 years of age and older) have borderline total cholesterol while over 40 million have undesirable levels.

Is it possible to lower my cholesterol level?

Sure! The build up of cholesterol in the arteries can be slowed or decreased by lowering of the cholesterol level. The National Heart, Lung, and Blood Institute reported a decrease in the U.S. average blood cholesterol level between 1978 and 1990 from 213 mg/dl to 205 mg/dl.

The total cholesterol level can be reduced or maintained by reducing the consumption of saturated fat and cholesterol, maintaining a healthy weight, and participating in regular physical activities. Saturated fats can be found in foods such as meats, dairy products, and vegetable oils. Unfortunately, there are certain factors affecting your cholesterol level that are beyond your control. Examples include increasing age, postmenopausal status in women, and genetic factors. In some instances, drug treatment can be used to supplement cholesterol-lowering lifestyle changes.

Appropriate lifestyle changes to maintain a desirable cholesterol level are specific to each individual. Consultation with your family physician is warranted before instituting these changes into your lifestyle. Your physician can help you set your goals and arm you in the battle against cardiovascular disease.

Please consult the clinic for your examination. The form is called Privacy Act Disclosure Authorization and Accounting Record (DAAR), or NASA Form 1536.

continued from page 2

Table 1. Cholesterol Standards

<table>
<thead>
<tr>
<th>Category</th>
<th>Total Cholesterol mg/dl</th>
<th>HDL mg/dl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desirable</td>
<td>&lt; 200</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>Borderline</td>
<td>200-239</td>
<td>40-60</td>
</tr>
<tr>
<td>Undesirable</td>
<td>240+</td>
<td>&lt; 40</td>
</tr>
</tbody>
</table>

The National Heart, Lung, and Blood Institute estimated 25 million Americans (10.1% of the population) smoked cigarettes in 1965. The first Surgeon General’s Report on Smoking and Health in 1964, about 10 million people in the United States have died from smoking-related illnesses such as heart disease, lung cancer, or other serious diseases. Certainly reported cigarette smoking has become indisputably clear, which lead to alveoli, in which oxygen and carbon dioxide are exchanged. In asthma, the bronchioles become constricted and may fill with fluid, which causes shortness of breath, wheezing and coughing.