

EFFORTS

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Emphysema Takes Your Breath Away

July 2005

WHEN TO START EXERCISING - IT IS NEVER TOO LATE

Older persons who are capable of physical activity but do not exercise have an increased risk of future problems walking or climbing stairs, according to research published in the Journal of the American Geriatrics Society.

The Health, Aging and Body Composition Study (Health ABC Study) follows 3,075 black and white men and women aged 70 to 79 years old over the course of seven years to investigate changes in body composition as a pathway by which multiple diseases contribute to disability. Through annual clinic exams, home exams and telephone interviews, researchers discovered that mobility loss in older persons who do not exercise can be reduced by having an active lifestyle.

Recommendations for exercise such as 1.5 to 2 hours of walking per week can help to decrease mobility loss with aging.

"Together with earlier evidence that physical activity in old age is beneficial for physical, cognitive and psychological health, the results show the importance of an active lifestyle in old age," states lead author of the study, Marjolein Visser, PhD. "Health care providers should be aware of these beneficial effects of physical activity and communicate this to their patients." Visser adds that more attention should be paid to the prevention of health decline through physical activity by health policy makers.

At the start of the study, none of the participants reported problems in walking one-quarter of a mile or climbing 10 steps. After 4.5 years, 34% of the men and 47% of the women developed problems in performing these activities. Data showed that participants who were inactive at the start of the study had the greatest risk of developing mobility problems compared to the exercisers, who had the lowest risk.

"Several studies have shown that becoming active at an old age still has positive health effects, showing that it is never too late to start being active," says Visser. "Older persons should be informed about the beneficial effects of physical activity and should realize that it is not always necessary to visit a sports club."
.....American Geriatrics Society



WALK SLOWLY FOR WEIGHT LOSS IF YOU ARE OBESE

Leisurely walking for distance combined with low-impact cardiovascular activity appears to be the best formula for obese people seeking to get into shape and stay healthy, according to a University of Colorado at Boulder study.

Ray Browning, a doctoral student in CU-Boulder's integrative physiology department and lead author on the new study, said the results show that people who walk a mile at a leisurely pace burn more calories than if they walk a mile at their

normal pace. In addition, those who walk at 2 miles per hour rather than 3 miles per hour reduce the loads on their knee joints by up to 25 percent.

"The message is that by walking more slowly, obese individuals can burn more calories per mile and may reduce the risk of arthritis or joint injury," he said.

Browning and his CU colleagues also found the number of calories burned per pound of body weight is similar for obese adults as normal sized adults walking at the same speed. Because obese people generally have heavier legs, wider stances and swing their legs in a wider arc, the researchers expected the cost of walking for obese people to be significantly higher.

"This was a surprise," said Browning. "The subjects probably are unwittingly altering their posture and walking with straighter legs, conserving calories in the process."

A paper by Browning, CU-Boulder integrative physiology Associate Professor Rodger Kram and undergraduates Emily Baker and Jessica Herron was presented at the June 2005 meeting of the American College of Sports Medicine meeting in Nashville and published recently in the journal, "Obesity Research."

The CU-Boulder researchers based their expectations that obese adults would have a greater energy cost when walking on previous studies by Kram's lab team. In one study, energy expenditure increased by about 25 percent when normal-weight people walked with a deliberately wider stance, said Browning.

Other CU studies conducted in CU's Locomotion Laboratory have shown that normal weight people wearing "winged" shoes designed to force them to increase their lateral leg swing increased the metabolic cost of walking by 30 percent, Browning said.

"As people become gradually obese, they also seem to become particularly graceful," said Kram. "There appears to be some sort of a physiological drive for them to minimize the amount of energy they expend."

The researchers tested 20 men and 20 women on treadmills and sidewalks, half of whom were of normal weight and half classified as class 2 obese, meaning they have a body mass index, or BMI, of 30 to 40. A 5-foot 4-inch tall woman with a BMI of 30 weighs about 175 pounds, while a 6-foot man with a BMI of 30 weighs about 225 pounds.

The researchers measured each subject's body composition using an instrument known as a DEXA scanner to measure fat mass, lean tissue mass and bone mineral content of the total

body. They also measured the oxygen consumption and carbon dioxide production of the test subjects to determine the energy and calories expended while walking.

As part of the ongoing research, the research team is using a unique treadmill that can independently measure loads placed on the left and right feet while walking, Browning said. The treadmill helps them measure how the biomechanical forces increase with body weight and walking speed.

The results show that brisk walking dramatically increases the knee joint forces, which can lead to a variety of problems including joint injuries and arthritis, the researchers said.

"This study also pointed up the phenomenal accomplishments of obese people," said Kram. "Our test subjects lead productive lives, and if you weigh 300 pounds, many everyday activities are athletic endeavors."

Walking doesn't require special clothing, stressed Browning. "It's doing some simple things, like using the stairs rather than the elevator, parking your car further from your destination, or getting off the bus one stop early and walking. Rather than trying to walk fast, obese individuals can gain both caloric and biomechanical benefits from walking at a more leisurely pace."

Because walking slowly may not significantly improve an obese person's level of cardiovascular fitness, performing other vigorous lower-impact activities like swimming, cycling, step routines and elliptical training workouts also are recommended, said Browning.University of Colorado



STRENGTH TRAINING FOR AMERICANS 50+

It's true: Adding a little muscle to your body will help you slim down. Researchers at Tufts University found that people over 50 who did 30 minutes of moderate strength-training exercises a week for three months each built three pounds of muscle and lost four pounds of fat, even though they added an average of 370 calories to their daily diet. That's because building even a small amount of muscle increases your metabolism, and allows you to burn more calories around the clock, says Wayne L. Westcott, fitness research director at the South Shore YMCA in Quincy, Massachusetts. He designed this fast, easy muscle-building workout especially for AARP The Magazine. It takes less than 30 minutes to do, but three weekly sessions can add at least a pound of fat-burning muscle to your frame in just two months. Before you start, get your doctor's approval.

Then, all you need is an elastic "resistance band," which you can find for less than \$10 in sporting goods stores. And remember, you don't need to grunt and strain through these moves; simply adjust the length of the elastic band so it provides just enough resistance to make your muscles feel moderately fatigued after doing 15 repetitions. Gradually work up to doing three sets of each move.

Deep Knee Bends

[Develops the muscles in your legs and buttocks]

With your feet shoulder-width apart, stand on the band so it's firmly anchored under the soles of your feet. Grasp the ends of the band so your arms are straight at your sides, as shown (A). The band should be stretched. Now, bend your knees, and slowly lower your body as if you were going to sit in a chair. Don't bend

your waist-keep your upper body straight. When you've gone low enough to feel a comfortable stretch (try to go down until your thighs are nearly parallel with the ground, if you can), reverse the motion, and return to the standing position. Try to complete 15 repetitions.

Seated Sit-Ups

[Strengthens stomach muscles]

Sit in a high-backed chair with the resistance band looped around the back of the chair. Cross your arms and grip the ends of the band (A). Now, slowly bend at your waist, using your stomach muscles to bring your shoulders and upper back away from the chair about five inches. Keep your lower back flush against the back of the chair (B). Slowly return to the upright position (A). After doing 10 to 15 repetitions, briefly rest, and then repeat the move-with a twist. Rotate your body as you perform the sit-up, moving your right shoulder toward your left knee (C). Return to the upright position. You should complete 10 to 15 reps on each side.

Biceps Curls

[Strengthens your arms, and the muscles in your torso]

Start in the standing position as for the Deep Knee Bend, with your palms up. Keeping your elbows at your sides, slowly bring your fists toward your shoulders, stretching the band (B). Lower your arms again, and repeat for 15 repetitions.

Seated Row

[Develops the muscles in your arms and upper back]

Sitting on the floor with your legs extended, wrap the band around the center of your feet. Grasp the ends of the band, as shown (A). Slowly pull the ends toward you until your hands touch your chest. Try to pinch your shoulder blades together, and hold for three seconds (B). Relax your shoulders, then return your arms to the starting position. Repeat the move for 15 repetitions.

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POLYUNSATURATED FATTY ACIDS IMPROVE EXERCISE CAPACITY IN COPD

Polyunsaturated fatty acids (PUFA) have been shown to mediate inflammatory and metabolic pathways involved in the muscle impairment seen in COPD patients, but could daily supplements of PUFA really have a positive effect on exercise capacity in these patients? A new study suggests they can. Researchers randomly assigned 80 COPD patients to receive either a PUFA supplement or placebo during an eight week pulmonary rehabilitation program. While similar increases in weight, fat-free mass, and muscle strength were seen in patients in both groups, those in the supplement group had a greater increase in the peak load during the incremental exercise test. They also experienced a greater increase in duration during the constant work rate test. The authors believe this is the first study to show beneficial effects for PUFA on exercise capacity in COPD patients.

I was going through un-opened e-mail in my home account where I receive several bulletins from specific areas of interest from the AARC (American Association for Respiratory Care - our professional organization) and came across this tidbit of information which could/should be of interest to those of you who are at or below your ideal body mass and are having

trouble gaining weight and adequately tolerating exercising. Not only does it shed light on specific benefits of consuming PUFA's, but it supports the not always popular recommendation to increase percent of fat intake consuming the very oils that contain PUFA's. It also may support my recommendation of the supplemental shake, the recipe of which I have shared many times with y'all, even supporting the added recommendation elsewhere in the popular and medical literature that one might think about adding intake of select oils and fish to their diet to enhance the potential for benefit. My shake calls for one to two tablespoons of canola oil, if you recall.

The benefit of both increased calories per unit of food weight AND the anti-inflammatory benefit of PUFA's ultimately delivers a double benefit to those with COPD, especially to those whose COPD is more severe. Check it out.Mark Mangus



URINARY INCONTINENCE IS NO LONGER JUST YOUR GRANDMOTHER'S CONCERN

American Physical Therapy Association Opens the Door To Silent Health Issue Affecting Men and Women of All Ages

Urinary incontinence, or involuntary loss of bladder control, isn't something that just happens to older woman. In fact, the condition affects men and women alike, young and old. More than 17 million Americans have urinary incontinence, and the experience can leave them feeling ashamed, socially isolated, and depressed, yet only 15 percent seek treatment.* According to the American Physical Therapy Association (APTA), those who experience incontinence need not feel this way, as proper preventive measures and treatment can help patients manage, if not alleviate, this often debilitating condition.

"While bladder control problems occur twice as often in women, men also experience incontinence, particularly after prostate surgery or lower back injuries," says physical therapist and APTA member Kendra Harrington, PT, MS, who focuses on bowel, bladder, and sexual dysfunction at Walter Reed Army Medical Center. She notes that structural or nerve damage from surgery or injury may result in chronic incontinence, or long-term difficulty controlling urination.

"But we have also seen a significant increase in the number of urinary incontinence cases involving servicemen and women who have developed the condition as a result of repeated jumps off caravans onto hard pavements. Or, in the case of paratroopers, as a result of strong, sudden yanks on parachute ripcords," she adds.

Harrington also works with incontinence patients as young as 18, who developed the condition as a result of poor muscle development in childhood, early pregnancy, pediatric surgery, or participating in highly intense athletics such as track and field.

Physical therapist and APTA member Stephanie M Coffey, PT, MPH, a specialist in pelvic floor dysfunction, notes that the number of people with urinary incontinence is most likely much higher than reported. "Patients often think that because of age or medical history, incontinence is something they have to learn to live with, but in reality that couldn't be further from the truth," she says. "Health care professionals need to be aware of the role

that physical therapists play in treating incontinence so that their patients know about alternatives to diapers, medication, or surgery."

APTA offers a free brochure to help consumers understand what incontinence is and the different kinds of physical therapy options available to manage the condition or, in some cases, regain complete continence. [Click here for the brochure.](#)

TYPES OF INCONTINENCE

According to Coffey, one of the two most common types of incontinence is stress incontinence (a sudden involuntary loss of urine when moving in a certain way, such as when exercising, sneezing, laughing or coughing) that may result from pregnancy, childbirth, menopause, or pelvic surgery. "During pregnancy and childbirth, weakened pelvic floor muscles and poor ligament support at the bladder can lead to stress incontinence which may or may not resolve itself," said Coffey. "Similarly, women going through menopause experience incontinence because the reduction in estrogen can contribute to weakened vaginal tissues," she added.

Other contributors to stress incontinence may include:

- Pelvic surgery, such as hysterectomy
- Obesity
- Chronic cough that may be associated with pulmonary diseases
- Urinary tract abnormalities
- Certain over-the-counter cold medications

The causes of urge incontinence (when the bladder muscle contracts at the wrong time, causing leakage with the urge to urinate) can be less clear-cut, notes Coffey. Possible causes are urinary tract infection, kidney stones, constipation, neurological disorders (such as Parkinson disease or multiple sclerosis), and bladder irritants such as chocolate, caffeine, or nicotine. "To effectively treat or manage bladder control problems, it is essential to first get a proper diagnosis," cautions Coffey.

SQUEEZE BEFORE YOU SNEEZE!

Physical therapists use a variety of methods to help patients correct pelvic floor weakness. They evaluate the extent of incontinence, identify treatment goals and make sure patients understand how treatment works. Kegel exercises, or pelvic floor muscle exercises that involve contracting, holding, and releasing pelvic floor muscles, are the most effective weapon in the fight against stress incontinence, notes Coffey. "Once patients have correctly identified these muscles, I typically recommend Kegel exercises three times daily for a total of 30 minutes for mild to moderate cases and 45 minutes daily for more impaired cases," she says. Coffey also notes that these exercises can be done during daily activities, such as while sitting at your desk, driving, or watching television, but for those with very weak muscles, she recommends starting the exercises while lying down.

Coffey often reminds her patients who experience stress incontinence to "squeeze before you sneeze," or to squeeze pelvic muscles tight before doing the activity that causes leakage, be it sneezing, coughing or laughing. Physical therapists can also offer tips on lifestyle changes that will help make the bladder less irritable -- including lifting and moving

correctly, avoiding common bladder irritants, keeping a bladder diary, and exercising correctly, such as avoiding improper sit-up techniques.

ADDITIONAL PHYSICAL THERAPIST MANAGEMENT FOR URINARY INCONTINENCE MAY INCLUDE:

Education about the bladder, pelvic floor muscles, and normal emptying techniques

Bladder retraining and timed schedules for urinating

Dietary modifications

Vaginal weights to strengthen the pelvic floor muscles

Biofeedback training (1. Electrode is placed over the pelvic floor muscle to read the muscle activity and a wire connects the electrode to a TV monitor in order to watch and learn how much to squeeze; or 2. An inflated probe inserted into the vagina is squeezed as pelvic floor muscles effectively contract)

Electrical stimulation (A low electrical current is passed through an electrode placed over the pelvic floor muscles)

General information about medications that aim to stop abnormal bladder muscle contractions or tighten sphincter muscles

According to the Society of Women's Health Research, more money is spent annually on incontinence products than on menstrual products and that lifetime medical costs associated with incontinence can be as much as \$60,000, "a staggering amount," Harrington observes.

The American Physical Therapy Association is a national professional organization representing 65,000 physical therapists, physical therapist assistants and students. Its goal is to foster advancements in physical therapy practice, research and education.

.....American Physical Therapy Assn



URINARY INCONTINENCE

A few simple lifestyle changes may help the more than 13 million Americans with urinary incontinence regain control of their daily lives, one expert says.

This loss of bladder control is more common in people 65 and older and affects women more often than men. While drugs and minimally invasive surgery can help treat the condition, people with urinary incontinence can also take some important steps on their own, said Dr. Carol Figuers, an associate clinical professor in the division of physical therapy at Duke University Medical Center.

For example, "decreasing or eliminating caffeine intake can help reduce bladder urges," Figuers said in a prepared statement. Caffeine can irritate and stimulate the bladder and cause urgent, frequent urination and increased urine production, she explained. Individuals who drink more than two caffeinated beverages a day should gradually reduce their caffeine intake to avoid possible withdrawal symptoms such as headache or sleepiness. Substituting non-caffeinated drinks in place of coffee, tea and colas can go a long way to reducing incontinence, the Duke expert said.

On the other hand, it's not a good idea to cut back on intake of liquids in an attempt to reduce the urge to urinate, Figuers said. Lack of liquids can cause dehydration, which can cause urine to become concentrated and actually result in increased bladder urgency, foul-smelling urine and, sometimes, bladder infection.

Drinking too much alcohol and eating too much spicy food can also aggravate incontinence.

Figuers said that bladder training and "timed voiding" can help control wayward bladders. Developing a regular schedule of urinating can help bladders hold more urine and gradually increase the time between urination. Holding urine too long can increase the risk of urinary tract infection, however.

Urinary incontinence is often linked to a weakening of the pelvic floor muscles. Pelvic floor muscle exercises (Kegel exercises) can strengthen those muscles and help prevent urine leakage, Figuers said. "An individual can learn to improve both the strength and endurance of this special muscle group through regular exercise," she explained. "They're most effective when a person is able to isolate the pelvic floor muscle and exercise that muscle specifically."

.....American Physical Therapy Association



LUNG VOLUME REDUCTION SURGERY TOPS REHAB FOR EMPHYSEMA

Patients with severe emphysema can achieve considerably greater improvements in bone mineral density (BMD) by undergoing lung volume reduction surgery than from rehabilitation, according to a new study.

Researchers in Rome, Italy selected, 70 male patients with severe emphysema, who were advised to undergo lung volume reduction surgery. Forty patients decided to undergo surgery, while the other 30 chose to participate, instead, in a standard respiratory rehabilitation program.

Patients who underwent surgery experienced significant improvements in respiratory, symptomatic, anthropometric, and biochemical parameters, whereas patients in rehabilitation experienced a worsening of bone-related hormones and turnover markers without recovering bone mass.

The most significant improvements in BMD were in the 19 patients who underwent surgery and quit oral steroids. The 21 other patients who underwent surgery but continued taking oral steroids also experienced improvements with BMD, but to a lesser degree.

Researchers conclude that lung volume reduction surgery is better for improving BMD than rehabilitation, whether or not the patient continues taking oral steroids. The study appears in the June issue of CHEST, the peer-reviewed journal of the American College of Chest Physicians.



MULTIPLE CHEMICAL SENSITIVITY/ ENVIRONMENTAL ILLNESS

I can't handle perfume or other fragrances. If you have the same problem, politely let other people know. No one would want you to suffer.

You are not the only one, a recent report in the Journal of the American Board of Family Practitice concludes that employees in health care settings should be prepared to treat colleagues who have been assaulted by patients wielding perfume. A female medical assistant with no history of asthma suffered an allergic episode of near-suffocation after being

spritzed with perfume three times in the face.

For those of us who react to perfumes, paint fumes, cleaning solvent fumes, etc, have many problems to overcome in this world. Most of us can't even go to a beauty salon, we have to hack our hairs off ourselves. The chemical smells overwhelm us.

Perfume today is not made from flowers but from toxic chemicals. It's about as romantic as hazardous waste. More than 4,000 chemicals are used in fragrances. Of these, 95% are made from petroleum. No agency regulates the fragrance industry, yet perfume chemicals are as damaging to health as tobacco smoke.

In many hospitals no perfumes are allowed!



PORTABLE MEDICAL OXYGEN -Waynesburg, PA

Separation Design group was awarded a Phase I STTR grant by the National Heart, Lung and Blood Institute. This \$152,000 grant will help support preliminary research leading toward the development of an improved portable medical oxygen concentrator. Phase I work will run through April 2006. By that time we expect to have a proof-of-concept model of our lightweight portable concentrator.

If you are one of the nearly one million Americans with chronic obstructive cardiopulmonary disease (COPD) or other diseases that require oxygen therapy, you are painfully aware of the restrictions that are, literally, attached to long term oxygen therapy (LTOT). Oxygen bottles are cumbersome and require delivery for refilling. Home oxygen concentrators are scaled down versions of the same complex mechanical equipment used by steel mills and glass factories.

Even the most sophisticated "portable" battery-powered oxygen concentrators weigh more than a gallon of milk and are the size of a toaster. How mobile would you be carrying this everywhere you go? How often would you visit a neighbor or even cook a meal? These devices are too noisy to take to the movies or a restaurant. And none of the portable oxygen units on the market today are approved for commercial air travel. Research supported by a National Institutes of Health grant is focused on developing the chemical structures necessary to produce medical quality oxygen. This work is being carried out in conjunction with scientists at Waynesburg College. SDGroup's innovation will replace the cumbersome, complicated, mechanically operated oxygen separation components with a single, solid state MCAT unit that electronically filters the air to produce an enriched oxygen flow.

An oxygen concentrator incorporating SDGroup's new separations technology will have no moving parts to wear, degrade, or need replenishing. Its battery life could be extended far beyond the current 2-hour limit. It will be virtually silent. And, integrated into a manufacturer's filter and battery unit, could be as small as a portable CD player. With no moving parts or explosively high concentrations of oxygen, it may well be the first personal portable oxygen concentrator approved by the FAA. Such a unit will radically improve the quality of life for hundreds of thousands of LTOT patients. MCAT units could also provide portable oxygen for remote or emergency medical and high altitude recreation needs. These and other markets indicate a significant trend to improve one's performance by improving one's environment. MCAT makes it possible.

NOVARTIS'S NOVEL BRONCHODILATOR PAVES WAY FOR POTENT COPD COMBINATIONS

Novartis has unveiled promising Phase II data for its once-daily bronchodilator, indacaterol (QAB-149). With a long duration of action, rapid onset of action and clean side effects profile, the drug could provide a new standard for bronchodilator therapy in patients with asthma and chronic obstructive pulmonary disease (COPD).

Novartis presented a series of abstracts at the American Thoracic Society International conference held in San Diego, California, on May 23, 2005 on the novel, long-acting beta-2 agonist indacaterol (QAB-149). The drug provides effective and well-tolerated bronchodilation for up to 24 hours, with convenient once-daily dosing a major advantage over existing long-acting inhaled beta-2 agonists. This, when combined with a rapid onset of action and clean side effects profile, suggest that QAB-149 clearly has blockbuster potential, serving as a platform for Novartis to expand its presence in the asthma/COPD market through the development of dual, and potentially triple action, combination products.



SCIENTISTS GROW NEW HUMAN BLOOD VESSELS *Technique could lead to better treatments for heart disease*

Scientists have grown human blood vessels from cells taken from elderly patients in a ground-breaking experiment that could lead to new treatments for heart disease within the next decade.

Cardiovascular disease is a leading cause of death in developed countries. In the United States alone it accounts for more than 40 percent of all deaths.

Growing new blood vessels from a patient's own cells would enable doctors to bypass clogged arteries in patients whose own vessels are not suitable.

"We took vascular cells from four elderly men with heart disease and engineered new blood vessels," said Dr. Laura Niklason, of Duke University Medical Center, in Durham, N.C.

The scientists, who reported their research in The Lancet medical journal, grew blood vessels in the laboratory from cells taken from four men aged 47-74 who were having coronary bypass surgery.

Growing vessels from the patient's own cells should alleviate the problem of rejection by the patient's immune system.

Although the blood vessels were not strong enough to be implanted in patients, the researchers said the study presents "a proof of principle."

With more research they believe they can overcome the problem and ensure the safety of the procedure.

"We still have a couple of more stepping stones to get these vessels ... to be functional enough so they can survive in the patient," Niklason said in an interview.

Injected gene promotes endless growth

She and her team removed muscle and endothelial cells from the saphenous vein, which is often used to bypass

blockages in the arteries around the heart, in the patient's lower leg.

Endothelials are cells that line the inside of blood vessels.

A key to the whole process was the injection of a gene into the cells to make them essentially live and divide forever. Without that telomerase gene, the cells would divide only a small number of times in the lab and then stop growing.

"The lifespan extension strategy is potentially important for tissue engineering of a lot of other tissues," Niklason said. "It is a globally enabling step."

After the cells were grown in the lab, they were placed on a sponge-like biodegradable polymer tube. Vitamins and nutrients were pulsed through and around the tube to mimic conditions in the body.

As the muscle cells proliferated and the tube dissolved, the scientists added the endothelial cells to complete the vessels which were grown for up to seven weeks.

In a commentary in the journal, Eric Brey and Howard Greisler of Loyola University Medical Center in Illinois described the research as an important advance in tissue engineering.

"The researchers provide a degree of optimism for the feasibility of clinical applications of engineered blood vessels," they said.

.....MSNBC



RESEARCHERS GROW STEM CELLS FROM HUMAN SKIN

Researchers at Wake Forest University School of Medicine have successfully isolated stem cells from human skin, expanded them in the laboratory and coaxed them into becoming fat, muscle and bone cells. The study, one of the first studies to show the ability of a single adult stem cell to become multiple tissue types, is reported today in *Stem Cells and Development*.

"These cells should provide a valuable resource for tissue repair and for organs as well," said Anthony Atala, M.D., director of the Wake Forest Institute for Regenerative Medicine and senior researcher on the project. "Because these cells are taken from a patient's own skin, there would not be problems with organ or tissue rejection."

The research team grew mesenchymal stem cells, a type of stem cell normally found in bone marrow. Using tissue samples from 15 donors who had routine circumcisions, the scientists were able to isolate single stem cells, which they then grew in culture dishes in the laboratory. The scientists used hormones and growth factors to coax the stem cells into becoming fat, muscle and bone cells.

When the differentiated cells were seeded onto three-dimensional molds and implanted in mice, they maintained features consistent with bone, muscle and fat tissue. "Our study shows that stem cells can be obtained from a simple skin biopsy and can be made to become three vital tissues," said Shay Soker, Ph.D., associate professor of surgery at Wake Forest's School of Medicine, which is part of Wake Forest University Baptist Medical Center. "The bulk of our bodies is made up of fat, muscle and bone."

The promise of stem cells lies in their ability to develop into specialized types of cells and to replicate themselves. Scientists

hope to harness the potential of stem cells and use them to replace damaged cells and tissue in conditions such as spinal cord injuries, diabetes, Alzheimer's disease, stroke and burns.

Most scientists believe that stem cells from human embryos are the most versatile type of stem cell because they have the potential to form any cell or tissue in the body. But they are also exploring the potential of stem cells from adults. In addition to skin, the cells have been identified in bone marrow, the brain and blood from the umbilical cord.

"Compared to bone marrow, a skin biopsy is easy to take, so it offers advantages for clinical use," said Soker. "The cells can be obtained from any small sample of human skin."

Next, Atala's research team hopes to test the function of the tissue that was created from the stem cells.

"We've proved that the cells can be used to engineer tissues consistent with bone, muscle and fat when implanted in animals; now we need to test their function long term," said Soker.

Soker said the cells have potential to be used both in tissue engineering - the science of growing tissues and organs in the laboratory - as well as in cell therapy. For cell therapy, laboratory-grown cells would be injected into the body to replace breast tissue removed by surgery, to fill in the gaps in bone fractures or replace muscle damaged by injury.

"The ability to engineer tissues from a patient's own cells may overcome two major problems in transplantation medicine: immune rejection and tissue shortage," Atala said.

.....Medical News Today



STEM CELL ADVANCES MAY MAKE MORAL ISSUE MOOT

If only human embryonic stem cells could sprout anew from something other than a human embryo. Researchers could harvest them and perhaps harness their great biomedical potential without destroying what some consider to be a budding human life.

But like a low-calorie banana split or the proverbial free lunch, there is no such thing as an embryo-free embryonic stem cell.

Or is there?

In recent months, a number of researchers have begun to assemble intriguing evidence that it is possible to generate embryonic stem cells without having to create or destroy new human embryos.

The research is still young and largely unpublished, and in some cases it is limited to animal cells. Scientists doing the work also emphasize their desire to have continued access to human embryos for now. It is largely by analyzing how nature makes stem cells, deep inside days-old embryos, that these researchers are learning how to make the cells themselves.

Yet the gathering consensus among biologists is that embryonic stem cells are made, not born -- and that embryos are not an essential ingredient. That means that today's heated debates over embryo rights could fade in the aftermath of technical advances allowing scientists to convert ordinary cells into embryonic stem cells.

"That would really get around all the moral and ethical

concerns," said James F. Battey, chief of the stem cell task force at the National Institutes of Health. The techniques under study qualify for federal grant support because embryos are not harmed, he noted. And eventually the work could boost the number of stem cell colonies, or lines, available for study by taxpayer-supported researchers.

The transformation of ordinary body cells into extraordinary stem cells is not a matter of alchemy but molecular biology. All human cells, be they stem or otherwise, have the same basic complement of genes. What is different about stem cells -- and what gives them their remarkable capacity to proliferate and morph into whatever kind of cell the body may need -- is the specific pattern of activity of their genes. It is all about which genes are working and which are dormant.

As cells mature during embryonic and fetal development, certain genes in those cells are switched either on or off. Depending on the new pattern of activity, each cell becomes skin, heart muscle, nerve or some other kind of specialized cell.

Now scientists are exploring methods for resetting the genetic switches inside various cells to the positions that will make them embryonic again. Both of the two major approaches now under study use existing embryonic stem cells (widely available from previously destroyed embryos and eligible for study using federal funds) to help ordinary cells become stem cells.

In one approach pioneered by Robert Lanza and colleagues at Advanced Cell Technology in Worcester, Mass., researchers pluck single cells from eight-cell embryos -- embryos so young they do not have stem cells yet.

Fertility doctors have known for years that early embryos seem unfazed by the removal of any one of their eight virtually identical cells, called blastomeres. In fact, it is common today to remove a single, representative blastomere from a laboratory-conceived embryo and test that cell for disease genes before deciding whether to transfer that embryo into a woman's womb.

Working with early mouse embryos, the team has found that single blastomeres, when cultivated in dishes with embryonic stem cells, can become what appear to be embryonic stem cells themselves. Chemicals secreted by the embryonic cells apparently flip the right genetic switches in the blastomeres to make them act "stemmy."

About a quarter to one-third of blastomeres treated this way can be coaxed to become embryonic stem cells or closely related embryo cells, said Lanza, who declined to release specific data pending publication in a peer-reviewed journal.

If this technique were applied to humans, then a single cell taken from an eight-cell fertility clinic embryo could give rise to a self-replicating line of embryonic stem cells without compromising the donor embryo's odds of someday growing into a baby.

"The president has said it is wrong to destroy a life to save a life," Lanza said. "This might be a way to get some cell lines that the president . . . can get behind."

Other researchers are experimenting with variations on a second approach. Chad Cowan and co-workers at Harvard

University, for example, use chemicals to get an adult human skin cell to fuse with a human embryonic stem cell. The two cells become one with shared cellular contents, including two full batches of genes.

Experiments indicate that something in the stem cell "reprograms" the skin cell's genes, putting the hybrid cell into an embryonic state. The team is now developing ways to remove the original stem cell's DNA after reprogramming is complete. What will be left is an embryo-like cell that can be made to grow into all kinds of tissues -- all of which will be genetically matched to the person who donated the original skin cell.

Alan Trounson of Monash University in Australia has been performing similar experiments involving the fusion of mouse skin and stem cells. He recently reported he has developed a relatively simple system for removing that extra DNA after the skin cell's genes have been reprogrammed, offering hope that Cowan's work in human cells will indeed work.

And Yuri Verlinsky of the Reproductive Genetics Institute in Chicago reported at a meeting last month that he has succeeded in making new human embryonic stem cells by first removing the DNA from a stem cell and then fusing the rest of that cell with a human skin cell.

He has made 20 lines of stem cells this way, he said in an interview, acknowledging that he has yet to complete the battery of tests that will prove they can do everything an embryonic stem cell can do. "It's a work in progress," he said.

Researchers said several key challenges remain. Lanza has found it difficult, for example, to keep his newly made stem cells in an embryonic state. Most want to mature quickly into one kind of adult cell or another. Other scientists say it will take time to show that the stem cells they have made are genetically stable and healthy.

The ultimate challenge, scientists said, will be to get beyond their reliance on harvested embryonic stem cells and turn people's mature cells into embryonic stem cells of their own. To do so, researchers will have to identify the specific, switch-flipping chemical factors inside stem cells.

"The end hope is to determine the exact molecular components of reprogramming and get it down to something chemically useful so you can get adult cells to turn into any cell type you want," Cowan said. "That's the science fiction goal that we'd all like to see come true."

That cocktail of chemicals, synthesized in a lab and available off the shelf, could be the closest thing to a true elixir of life that science is ever likely to make.

.....The Washington Post



BRAIN CELLS GENERATED IN A DISH *Discovery pinpoints the true 'stem cell'*

Regenerative medicine scientists at the University of Florida's McKnight Brain Institute have created a system in rodent models that for the first time duplicates neurogenesis - the process of generating new brain cells - in a dish.

Writing in today's (June 13) Proceedings of the National Academy of Sciences, researchers describe a cell culture

method that holds the promise of producing a limitless supply of a person's own brain cells to potentially heal disorders such as Parkinson's disease or epilepsy.

"It's like an assembly line to manufacture and increase the number of brain cells," said Bjorn Scheffler, M.D., a neuroscientist with UF's College of Medicine. "We can basically take these cells and freeze them until we need them. Then we thaw them, begin a cell-generating process, and produce a ton of new neurons."

If the discovery can translate to human applications, it will enhance efforts aimed at finding ways to use large numbers of a person's own cells to restore damaged brain function, partially because the technique produces cells in far greater amounts than the body can on its own.

In addition, the discovery pinpoints the cell that is truly what people refer to when they say "stem cell." Although the term is used frequently to describe immature cells that are the building blocks of bones, skin, flesh and organs, the actual stem cell as it exists in the brain has been enigmatic, according to Dennis Steindler, Ph.D., executive director of the McKnight Brain Institute and senior author of the paper. Its general location was known, but it was an obscure species in a sea of cell types.

"We've isolated for the first time what appears to be the true candidate stem cell," said Steindler, a neuroscientist and member of UF's Program of Stem Cell Biology and Regenerative Medicine. "There have been other candidates, but in this case we used a special microscope that allows us to watch living cells over long periods of time through a method called live-cell microscopy, so we've actually witnessed the stem cell give rise to new neurons. Possibly a different method may come up to identify the mother of all stem cells, but we're confident this is it."

During experiments, scientists collected cells from mice and used chemicals to induce them to differentiate. During the process, they snapped images of the cells every five minutes for up to 30 hours and compiled the images into movies. Traditional ways to attempt neurogenesis have been unable to so closely duplicate the natural process. They also haven't allowed scientists to monitor the entire sequence of cell development from primitive states to functional neurons and expose the electrophysiological properties of the cells.

A little more than a decade ago, scientists came to realize that the brain continues to produce small amounts of new cells even in adulthood, overturning the belief that people are born with a fixed amount of brain cells that must last them throughout their lives.

In people, stem cells develop naturally into full-fledged brain cells as they travel through a neural pathway that begins deep within the brain in a region called the subventricular zone. The primitive cells mature along the way, finishing as neurons in a spot called the olfactory bulb.

In the laboratory cultures, the cells still move about, but the pathway is no longer important, showing that neurogenesis does not necessarily require the environmental cues of the host brain.

The natural development of stem cells in the brain is very similar to the lifelong production of blood cells in the human

body called hematopoiesis, with "poiesis" derived from the Greek word meaning "to make."

Scientists in Steindler's lab noticed the similarities between primitive cell development in blood and in the brain in the late 1990s, calling the process "neuropoiesis."

"The exciting part is we are actually using methods that researchers involved with hematopoiesis used," Scheffler said. "Those researchers took primitive cells, put them in a dish and watched them perform. From that, they learned vital information for clinical applications such as bone marrow transplants. Now we have a tool to do exactly the same thing."

By watching the cells perform, scientists can make judgments and influence the capacity of the cells to generate specific neurons.

"As far as regenerating parts of the brain that have degenerated, such as in Parkinson's disease, Huntington's disease and others of that nature, the ability to regenerate the needed cell type and placing it in the correct spot would have major impact," said Dr. Eric Holland, a neurosurgeon at Memorial Sloan-Kettering Cancer Center in New York who specializes in the treatment of brain tumors, but who is not connected to the research. "In terms of tumors, it's known that stem-like cells have characteristics much like cancer cells. Knowing what makes these cells tick may help by furthering our knowledge of the biology of the tumor."

.....University of Florida



TEN GARDENING TIPS FOR COPD AND EMPHYSEMA SUFFERERS

How to Breathe Easier When Gardening

Gardening is a fun hobby and a great way to get some exercise and relax at the same time. Gardening gets you outside in the fresh air and gives you something to look forward to everyday. It also gives you a sense of accomplishment.

Now that you have COPD or emphysema, you don't have to give up gardening. You just have to learn how to modify your activities to help you breathe easier. These ten tips will help you to continue to enjoy your love of gardening:

GARDENING TIP #1

- Have a friend, family member, or hired help build a raised-bed garden to eliminate the need for stooping. Stooping can cause dizziness and shortness of breath. If a raised-bed garden is not possible, try planting in window boxes or containers, and use a table that is waist-high for doing the planting.

GARDENING TIP #2

- If you love having a garden full of flowers, try planting perennials. They come up year after year. Therefore, you only need to plant them once.

GARDENING TIP #3

- Use gardening tools that have long, soft rubber handles. This will keep you from stooping and bending as much, and the soft handles will aid arthritic hands.

GARDENING TIP #4

- Use a wagon or cart for toting plants, soil, tools, and even your oxygen. This will help you save energy and avoid injuries.

GARDENING TIP #5

- Save your knees! Use a short stool when ground gardening.

GARDENING TIP #6

- Use a ground cover that blocks weeds, and mulch to keep weeds under control. This will help you save your energy for the fun tasks like pruning your roses!

GARDENING TIP #7

- Have a friend, family member, neighbor, or hired help do tasks, such as mowing, and spreading fertilizers or mulch. If you must do these tasks yourself, wear a dust mask, if possible. Grass clippings, chemicals, and even microorganisms found in soil are released into the air and can be inhaled, causing respiratory irritation. Soil may contain bird droppings which can cause histoplasmosis.

GARDENING TIP #8

- Be sure to stay adequately hydrated during gardening activities by drinking plenty of water. When days are hot and/or humid, consider staying indoors or working early in the morning or late in the evening when temperatures are cooler.

GARDENING TIP #9

- Check your medicine labels before venturing out to the garden. If you are taking any medications which cause sun sensitivity, you may need to re-think your day. Early morning or late evening, or just working in a shaded area may be best for doing your gardening.

GARDENING TIP #10

- Plan your gardening activities with small tasks and regular breaks. Gather all the tools and materials you will need before beginning your gardening. If you'd like to save all of your energy for gardening, gather your materials the night before and have them ready for when you begin gardening in the morning.

Remember to have fun with it; don't push yourself. If you feel breathless, take a break or retire to the indoors for the rest of the day. You can still enjoy gardening as long as you just modify your activities. Happy gardening!

....American Health Ways

THE HAZARD OF USING PETROLEUM JELLY IN THE NOSTRILS.

Question:

For several years, I've been putting a small amount of Vaseline in my nose each night to keep my nostrils from getting too dry. Before I did this, I'd have trouble getting to sleep because my nose felt so dry, and I would wake up each morning with dried blood in my nose. Now, I have neither of these problems, but I've begun to worry if this a good practice.

Answer:

A dry and irritated nose certainly is uncomfortable. This is commonly a nighttime problem, just as you describe, because the normal nasal secretions drain differently when we lie down. Also, during the night we don't swallow and drink liquids—actions that help keep the nasal tissues moist. The petroleum jelly you have been using coats the delicate nose tissues and helps moisturize them in two related ways. It forms a barrier that keeps the air from getting to the nose tissues, so it can't dry them out. And, it also retains the normal moisture produced by them. In general terms, petroleum jelly is safe to use. However, there is a potential problem from prolonged use as you describe. This problem arises because the petroleum jelly doesn't just stay in the nose but rather migrates to other parts of the body. Petroleum jelly usually drains out of the back of the nose with the normal nasal secretions and is then swallowed. While this is probably not a problem for you because of the small amount involved, petroleum jelly in the digestive system can reduce the number of vitamins that your body absorbs.

However, for those that use mineral oil—a similar type of petroleum—as a laxative on a frequent basis, the risk is much greater. The greatest risk from use of petroleum jelly in the nose comes from inhaling the material. This commonly occurs when asleep, so the person is unaware of it. The lungs can't easily eliminate this foreign substance as the digestive tract does. Instead, the lungs react to it, causing scarring and pneumonia-like fluid accumulations. This lung damage usually begins so gradually that the individual doesn't relate the symptoms to the use of petroleum jelly in the nose (or, in other cases, the chronic use of mineral oil for constipation or the frequent exposure to the spray lubricants used on machinery). Eventually, when chronic shortness of breath develops along with a cough, a chest X-ray will be done. While the lung images may look abnormal, it is usually necessary to obtain a sample of lung tissue to identify the specific type of lung disease. If the cause is petroleum jelly, the diagnosis will be "lipoid pneumonia," because lipoid is a doctor word meaning an oil-based substance like petroleum jelly.

So, to answer your question, it is dangerous for you to be using petroleum jelly in your nose every night.

.....familymedicineneews.org



THREE STUDIES LINK DAILY OZONE LEVELS TO MORTALITY RATES

Three independent research reviews - commissioned by the US Environmental Protection Agency and published in the July issue of *Epidemiology* - draw "remarkably consistent" conclusions linking daily levels of ozone pollution to an increased risk of death.

Accompanying editorial commentaries point out that, although the studies are limited by the nature of the data and the statistical methods used, the results provide the strongest evidence to date relating ambient ozone levels to daily mortality.

All three papers were meta-analyses, or statistical reviews of previous research data. By combining results from many

studies, important patterns can emerge that are not apparent in the individual studies. Although the researchers worked independently, using a broad range of studies and applying varying statistical methods,, all studies had the same goal: to assess whether death rates increase on days with high levels of ozone pollution -- and if so, how much.

Dr. Michelle L. Bell of Yale University and colleagues found a significant relationship between ozone and short-term mortality rates using two different datasets. The effect was particularly strong for cardiovascular and respiratory causes of death, in elderly people, and for same-day ozone levels.

For each 10 parts per billion (ppb) increase in daily ozone level, the total death rate for that day and the two following days increased by 0.87%. This relationship remained consistent after adjustment for other factors, including levels of particulate pollutants.

The analysis by Dr. Jonathan I. Levy and colleagues of Harvard School of Public Health found a very similar increase of 0.86% per 10 ppb. Most of the ozone-related increase occurred during the summer months. In this study, the relationship between ozone and mortality appeared significantly weaker in areas with high rates of home central air conditioning.

The analytic approach taken by Dr. Kazuhiko Ito and colleagues of New York University suggested a smaller overall effect of ozone on death rates, but confirmed that the main effect occurred during the warm months. Analysis of data from 23 geographic locations around the world confirmed a significant relation between ozone and mortality in all but 5 regions. The relationship was strongest in Brisbane, Australia, and Mexico City-cities where ozone levels remain fairly constant year-round.

Ambient ozone pollution is different from the higher-level "ozone layer" that shields the Earth from harmful ultraviolet radiation. At ground level, ozone-created when pollutants interact with sunlight-is a major component of smog. Previous studies have found increased rates of health problems on days with high levels of ozone pollution, especially in children and older adults with asthma and other respiratory diseases.

In an editorial commentary, Dr. Steven N. Goodman of Johns Hopkins School of Medicine highlights the fact that three independent research groups reached such consistent conclusions, despite using different methods and operating under differing assumptions. Dr. Goodman also points out some weaknesses of the statistical methods used, especially the use of pooled data from many single-site studies. A 14-year follow-up study of air quality from 95 U.S. cities suggests that ozone's effect on death rates may be smaller, though still significant. Very large, multi-site studies would be needed to provide the data needed for more definitive conclusions on the health risks of ozone.

A commentary by Dr. David V. Bates of University of British Columbia points out that the new studies are timely, because the EPA is planning a review of federal ozone standards in 2005. Added to previous research showing harmful health effects of ozone pollution, the new studies "point to the urgent need to reduce public exposures to ambient ozone by all possible means," Dr. Bates concludes.

LAUNCH OF NEW MASTERS DEGREE IN RESPIRATORY CARE BY THE NATIONAL RESPIRATORY TRAINING CENTRE, UK

The National Respiratory Training Centre (NRTC) has become the first academic institution to develop and run a Masters programme in respiratory care, with doctors and nurses attending their first study days this weekend in Warwick. The NRTC has launched the course in response to increasing demands for practitioners to take up specialist posts and the National Guidelines requirement for the development of skills based competencies.

The programme is a three year, flexible, distance learning programme, validated by the Open University and includes compulsory modules in respiratory disease and research methodology. Students are given the choice to study for either the full MSc in respiratory care, Post Graduate Certificate or Post Graduate Diploma.

Steve Holmes, Chairman of the General Practitioners Airways Group states that "The new NRTC masters level programmes is an exciting opportunity for the many GPs and health professionals with an interest in respiratory care to develop their practice. It covers the competencies set by the GPIAG to gain recognition as a General Practitioner with Specialist Interest - and I am sure enhance respiratory care for patients served by those able to undertake this course. I am delighted that a number of GPIAG members have already signed up - and am sure there will be more in the future."

The OU Validation Services report describes the Masters programmes on offer as "reflecting current thinking from both a clinical and academic perspective, providing a rewarding educational experience."

Monica Fletcher, Chief Executive of the NRTC comments; "The Masters programme in respiratory care is a natural evolution for the NRTC. The organisation has always been at the forefront of health professional education and it is most apt that we are first to offer this type of course. I am delighted that the OU report has commended the organisation for its "institutional commitment to lifelong learning, which is supportive and understanding of adult learners who are practitioners."

.....National Respiratory Training Centre, UK

LIKE OTHER BIOLOGICAL PROCESSES, LUNG FUNCTION HAS CIRCADIAN RHYTHMS

For some time it has been suspected that lung function may be among the biological processes known to fluctuate with the body's circadian rhythms. A recent study has confirmed that suspicion.

"Lung function has its own rhythm that may govern how much energy we exert throughout the day and the best times to engage in certain activities," reported Boris I. Medarov, MD, at the annual meeting of the American College of Chest Physicians in Seattle. Dr. Medarov is a Pulmonary and

Critical Care Medicine Fellow at Long Island Jewish Medical Center in New Hyde Park, New York. His five-year study looked at the fluctuations in two lung function indicators (the FEV1/FVC ratio and total lung capacity) between 8 am and 5 pm. Most of the 4,835 individuals in the study had previously been diagnosed with obstructive lung disease such as chronic bronchitis or emphysema, and some were being tested for lung disease.

"We often associate the end of the work day with being tired and less motivated for physical exertion. However, lung function seems to be at its best during this time," Dr. Medarov related. It appeared to be lowest around noon, when it typically dropped by about 7%--in some cases dropping by as much as 15%. While relatively small lung function variations such as these may not be significant in a healthy person, they could be, in patients with lung disease.

Extubation and physical activity may be easier for such patients when timed to correspond with peak lung function. In addition, the need for bronchodilator therapy may be reduced if the treatment is administered when lung function is poorest rather than if it is given indiscriminately throughout the day, as is common.www.pulmonaryreviews.com



REDUCED LUNG FUNCTION INCREASES

CARDIOVASCULAR RISK

New research shows that reduced lung function is a strong predictor of cardiovascular morbidity and mortality and ischemic heart disease. In an analysis of 1,861 participants of the first National Health and Examination Survey Epidemiologic Follow-up Study, researchers from Canada found that people with the most reduced lung function (measured by FEV1) are at greatest risk for cardiovascular morbidity. These patients had five times the risk of ischemic heart disease when compared with patients having strong lung function. A literature review of 12 large cohort studies, which included 83,880 participants, supported the notion that those with reduced FEV1 were at higher risk of cardiovascular mortality. This association was found to be independent of smoking status, age, gender, and other factors. The study appears in the June issue of CHEST, the peer-reviewed journal of the American College of Chest Physicians.



PAINKILLERS MAY CAUSE HEART ATTACKS

In what was said to be the biggest study of its kind to date, the researchers identified 9,218 patients in England, Scotland and Wales who had suffered a heart attack for the first time during a four-year period. They looked at whether these patients had been prescribed NSAIDs, including ibuprofen, diclofenac, naproxen, celecoxib (Celebrex) and rofecoxib (Vioxx).

New doubts were raised today about the safety of commonly-used painkillers which have been linked to an increased risk of heart attacks.

Last year, the arthritis drug Vioxx -- part of a group known as Cox-2 inhibitors -- was withdrawn on safety grounds, with researchers suggesting it may have killed many thousands of

patients. Now a new study, published in the British Medical Journal, has suggested that other non-steroidal anti-inflammatory drugs (NSAIDs), such as the commonly-used ibuprofen, may also increase the risk of heart attacks.

HEART ATTACK, STROKE

The research will concern many patients who may have switched to ibuprofen and other NSAIDs after concern was raised about Cox-2 inhibitors -- a selective type of anti-inflammatory drug -- and an increased risk of heart attack and stroke.

As well as Vioxx, doubts have emerged about another Cox-2 called Celebrex, which was also linked to heart and artery problems, although it remains on the market. The researchers, from Nottingham University, said further investigation of these drugs -- used to treat inflammation -- was needed, but patients should not stop taking them.

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RISK FACTORS

The researchers also took into account risk factors for heart attack such as age, obesity and smoking, as well as looking at whether there was existing heart disease. They concluded that, for those patients taking NSAIDs in the three months before their heart attack, the risk was greater than for those who had not taken the drugs for three years.

The risk of heart attack increased by almost a quarter (24 percent) in those taken ibuprofen and by 55 percent in those on diclofenac. The new generation of anti-inflammatory drugs Cox2s was also linked to higher rates of first-time heart attacks. Celecoxib increased the risk of heart attack by 21 percent, while rofecoxib increased the risk by 32 percent.

"Our most important consistent finding was a significantly increased risk of myocardial infarction (heart attack) in patients taking three specific drugs -- rofecoxib, diclofenac and ibuprofen," the researchers said.

IN CONTEXT

Putting the findings into context, the researchers said in terms of "numbers needed to harm" in the over-65 group, for those taking diclofenac one extra patient for every 521 patients was likely to suffer a first-time heart attack. For rofecoxib the figure was one patient for every 695, and for ibuprofen one patient for every 1,005 was at risk.

The researchers added: "Given the high prevalence of the use of these drugs in elderly people and the increased risk of myocardial infarction with age, even the relatively large number of patients needed to harm could have considerable implications for public health."

The team said that, as their report was an observational study, there may be other explanations for the findings, but there were enough concern to warrant reconsideration of the

REDUCING NEED FOR IMMUNE SUPPRESSION FOR ORGAN TRANSPLANTATION

Organ transplantation is accompanied by nonspecific immune suppression therapy to prevent T cell-mediated rejection. These immunosuppressants can cause infection, hypertension, cancer, and other undesirable side effects. Therefore, specific suppression of the T cells that attack the transplanted organ is needed.

It was known that anergic T cells (immune T cells that do not respond to antigen stimulation) generated in an artificial environment outside the living organism have immunosuppressive activity in vitro. Now in a study appearing online on June 9 in advance of the print publication of the July 1 print issue of the Journal of Clinical Investigation, Hisashi Bashuda and colleagues from Juntendo University investigate whether this approach can induce indefinite organ allograft survival in vivo, in six rhesus monkeys.

The authors stimulate recipient T cells from the monkeys with donor cells under conditions associated with the development of T cell anergy. Reinfusion of these cells into the recipient after kidney transplantation leads to very prolonged -880 days- and perhaps even indefinite graft survival in three long-surviving animals without administration of additional immunosuppressive agents. This study shows for the first time that anergic T cells generated ex vivo suppress renal allograft rejection in non-human primates. This may be an approach that could be used in human transplant trials.

.....Journal of Clinical Investigation

UNDERSTANDING DNA DRUG DELIVERY FOR LUNG DISEASES

Researchers at the American Society of Gene Therapy Meeting in St. Louis announced that by using imaging technologies, they are able to successfully trace the delivery of DNA nanoparticles and the extent of gene transfer in the lungs of cystic fibrosis (CF) animals. The study represents an important step in developing gene therapy for cystic fibrosis and other serious lung diseases.

Assem Ziady, Ph.D., assistant professor of pediatrics at the Case Western Reserve University School of Medicine, presented the results. He is conducting studies of a promising non-viral DNA nanoparticle technology that may prove to be effective in treating numerous human diseases. For this study, he collaborated with Zhenghong Lee, Ph.D., assistant professor of radiology and an expert in imaging.

In the study, Ziady and colleagues administered to CF mice DNA nanoparticles encoding a gene for an enzyme that produces light when exposed to a particular chemical. Later, the researchers could then use the emitted light to see in real time where the DNA nanoparticles had delivered the gene for expression in the lungs of the mice.

"Development of these real-time imaging modalities has allowed us to better assess the localization and site of activity of

.....ecommercetimes.com

our gene transfer complex formulations," said Ziady.

"Understanding gene transfer in animals is important in developing nucleic acid-based therapies to treat serious lung diseases such as cystic fibrosis."

The DNA nanoparticle technology is licensed to and being developed by Cleveland-based Copernicus Therapeutics, Inc. "Collaborations with scientists such as Dr. Ziady enable us to better develop nucleic acid therapeutics for different parts of the body and for multiple diseases," said Mark J. Cooper, M.D., senior vice president of Science and Medical Affairs of Copernicus. "Our lead program, which already has had a successful clinical trial, is development of a therapy for the lung complications of cystic fibrosis."

.....Case Western Reserve University

UK GOVERNMENT HELPS PATIENTS TO BREATHE EASY WITH MODERNISED HOME OXYGEN THERAPY SERVICES

Health Minister Jane Kennedy unveiled plans to improve home oxygen services for some 60,000 patients. Oxygen therapy services are vital in supporting adults and children with breathing difficulties, including those with long-term medical conditions such as cystic fibrosis and emphysema. The service helps them manage their symptoms so that they can live at home rather than in a hospital. "The new services will ensure that patients have access to the latest equipment that meets their individual needs and helps to improve their quality of life. Patients want to be at home and we want them to have the confidence and support to manage their symptoms at home. I know that patients and the NHS want to see change and I want to see this happen as soon as possible. Many patients receiving this service have Chronic Obstructive Pulmonary Disease which represents over 10% of all acute admissions every year and costs the NHS around £600m. A better home oxygen service will help to reduce emergency admission to hospitals."

Following competitive tendering, four companies have been awarded contracts to provide a modernised service across England by the end of the year, putting an end to the current fragmented service.

Patients will now have round the clock access to expert advice and support in making the best use of the latest equipment, including lighter weight cylinders, smaller, more efficient concentrators, liquid oxygen and, for the first time, portable systems that support greater mobility and independence.

Professor Wisia Wedzicha of the British Thoracic Society said "The introduction of the new home oxygen service is the most exciting development in the management of patients with chronic respiratory disability and respiratory failure for the past 20 years. "This service has been much awaited by patients, physicians and nurses. We look forward to working with the new providers in choosing the most appropriate oxygen system to support individual needs."

Dame Helena Shovelton of the British Lung Foundation

said, "Moving to this new system of home oxygen provision should result in a better service with a wider range of choice for patients. The British Lung Foundation has been working with the Department of Health to achieve this improvement and is delighted that people who need Long Term Oxygen therapy will have access to lightweight equipment that will enable them to go out more easily and so lead as full a life as possible."

The four successful companies are: Air Products; Allied Oxycare/Medigas; BOC; Linde

The new service supports clinical best practice and has been developed in consultation with clinicians and patients.

About 60,000 patients receive home oxygen therapy (England), including those with lung disease (such as Chronic Obstructive Pulmonary Disease and lung cancer), heart disease and cystic fibrosis. It also supports the discharge of premature babies so that they can be at home with their parents as soon as possible.

Chronic Obstructive Pulmonary Disease results in 300,000 emergency hospital admissions every year - this represents over 10% of all acute admissions and costs the NHS around £600m. The new service will help patients at home control their symptoms and support hospital discharge. Expert advice and support will be available 24 hours a day/7 days a week.

At present hospital staff cannot order home oxygen for their patients. This will change - both GPs and hospital doctors can order the required service, which must be delivered within specific response times, including emergencies.

Wisla Wedzicha is Professor of Respiratory Medicine, University of London, and a member of the British Thoracic Society Working Group on Oxygen Therapy.

Dame Helena Shovelton is Chief Executive of the British Lung Foundation. The BLF is a patient-centred organisation providing information and support for people with all the 40+ lung diseases. The BLF campaigns for better service provision and raises money for research into respiratory disease (<http://www.lunguk.org>). The BLF has 130 patient support groups called "Breathe Easy" across the UK.

.....DOH Press Office (UK)



PEOPLE WITH DIABETES MORE SENSITIVE TO CARDIOVASCULAR EFFECTS FROM AIR POLLUTION

People with diabetes may be at higher risk for cardiovascular problems when air pollution levels are higher, according to a new study of Boston-area residents. The ability of the blood vessels to control blood flow was impaired in adults with diabetes on days with elevated levels of particles from traffic and coal-burning power plants.

The researchers evaluated several kinds of fine particles found in urban air pollution. These included sulfate particles, which come mainly from coal-burning power plants, as well as ultra-fine particles and black carbon soot, which are generated primarily by diesel- and gasoline-powered vehicles.

"Our strongest finding was that blood vessel reactivity was impaired in people with diabetes on days when concentrations of sulfate particles and black carbon were higher," said Marie O'Neill, Ph.D., an epidemiologist now with the Robert Wood Johnson Health & Society Scholars program at University of

Michigan and lead author on the study. "Impaired vascular reactivity has been associated with an increased risk of heart attack, stroke and other heart problems."

"Previous studies have shown that when air pollution levels are higher, people with diabetes have higher rates of hospitalization and death related to cardiovascular problems," said NIEHS Director David Schwartz, M.D. "These changes in blood vessel reactivity may help explain this phenomenon."

The National Institute of Environmental Health Sciences, one of the National Institutes of Health, provided funding to O'Neill and other researchers at the Harvard School of Public Health for the study. Other collaborators were from the Joslin Diabetes Center and Beth Israel Deaconess Medical Center in Boston. The findings are published in the June 2005 issue of the journal *Circulation*.

"We don't really understand why fine particles may cause this decrease in vascular reactivity," said O'Neill. "Further research is needed to confirm this association between air pollution and vascular health and to understand what causes people with diabetes to be especially sensitive."

Researchers recruited 270 greater Boston metropolitan residents and divided them into two groups. The first group consisted of subjects with a positive diagnosis of type I or type II diabetes. The second group included subjects who were not diabetic, but who had a family history of diabetes or blood sugar levels slightly higher than normal.

The investigators used a technique called brachial artery ultrasound to assess blood vessel response in the study subjects. The measurement was obtained by applying a pressure cuff to the subject's upper arm and cutting off the blood flow through the arm's main artery. Researchers then released the cuff, allowing the blood to rush through. The researchers then evaluated changes in the diameter of the main artery as a result of the physical stress placed on the vessel.

"We observed an 11 percent decrease in diabetics' vascular reactivity on days when sulfate particle concentrations were higher than normal," said O'Neill. "We also noted a 13 percent decrease in their vascular reactivity on days with higher-than-normal black carbon concentrations."

"We hope our study will remind people that reducing air pollution is important for everyone's health, but especially for vulnerable members of our population, including the elderly and people with chronic health problems such as diabetes," she said.

Diabetes is a metabolic disorder in which blood sugar levels are elevated because levels of insulin are too low. Insulin is the hormone needed to process sugars and starches into energy. Diabetes is widely recognized as one of the leading causes of death and disability in the United States, affecting some 13.3 million Americans. Research conducted in Montreal, Quebec from 1984 to 1993 showed that hospitalizations and deaths related to cardiovascular problems increased among diabetics when levels of air pollution were higher.

.....NIH/NIEHS



STUDY IDENTIFIES WHY DIABETES DRUG CAUSES EDEMA

In related discoveries with far-reaching implications for treating diabetes and understanding hypertension, University of Utah researchers have learned why thiazolidinediones (TZDs), a major anti-diabetes drug, cause edema and also have found a new pathway critical to fluid metabolism. Identification of this pathway may help understand fundamental mechanisms of blood pressure control.

Using knockout-gene technology, the U of U School of Medicine researchers found that when TZD activates a nuclear receptor, the peroxisome proliferator-activated receptor gamma, in the collecting duct in the kidney, it serves as a mechanism for fluid retention, or edema. The researchers suggest that the distal nephron, for example the collecting duct, is crucial for regulation of sodium balance and blood pressure. The research is published this week in the Proceedings of the National Academy of Sciences online.

The discoveries may point the way to developing different drugs to treat Type II diabetes and open an entirely new area in the study of hypertension, according to Tianxin Yang, M.D., Ph.D., the two-year study's principal investigator, associate professor of internal medicine at the U medical school, and staff physician at the George E. Wahler Veterans Affairs Medical Center in Salt Lake City.

An estimated 18 million Americans suffer from diabetes. TZD compounds have been shown to be highly effective in lowering blood glucose and lipid levels and in controlling blood pressure.

"It's almost a perfect drug for diabetes," Yang said. But many diabetics who use TZD eventually have to discontinue the drug because it causes edema. About 1 percent of people who take TZD get pulmonary edema and chronic heart failure, both being potentially life-threatening conditions.

TZD works by activating PPAR-gamma, a receptor that helps sensitize the body to insulin. PPAR is found in muscle, fat, kidney, and heart and controls fatty acid and lipid metabolism. In the kidney, PPAR is found in the collecting duct, a critical site for the control of fluid metabolism.

To test the role of PPAR in edema, Yang created mice that specifically lacked PPAR-gamma in the collecting duct. He then administered TZD to these mice, as well as to a control group that didn't lack PPAR-gamma.

The mice not lacking PPAR-gamma showed about a 10 percent average increase in body weight because of fluid retention. The blood plasma volume of these mice increased by one-third, Yang said. But the mice bred without PPAR-gamma experienced no increase in body weight in response to the drug, according to Yang.

"This tells us that the body weight gain is regulated by PPAR-gamma in the collecting duct," he said. "We also found this drug decreased the sodium excretion in urine, so this could explain the fluid retention."

The mice without PPAR in the collecting ducts incurred no changes in sodium reabsorption, while those with PPAR excreted less sodium through urination. Yang said that the distal

nephron, which is usually subject to hormone regulation in the kidney, serves as a key pathway for keeping an accurate amount of sodium in the body.

Hypertension affects one in four U.S. adults and long had been considered a cardiovascular disease. But research now also focuses on the kidneys and the role of the distal nephron in retaining sodium opens a new area for study, he said.

.....medicalnewstoday.com



HOW CHRONIC EXPOSURE TO TINY LEVELS OF CARBON MONOXIDE DAMAGES HEARING IN YOUNG EARS

UCLA scientists have discovered how chronic exposure to low levels of carbon monoxide (CO) damages the inner ear of young rats, resulting in permanent hearing loss. At the Ca/OSHA's exposure limit of 0.0025 percent -- or 25 parts per million CO in the air -- the gas creates oxidative stress, a condition that damages the cochlear cells, leading to impairment of the auditory nerves.

CONTEXT: Tobacco smoke, gas heaters, stoves and ovens all emit CO, which can rise to high concentrations in poorly ventilated homes. Infants and children are particularly vulnerable to CO exposure because they spend a great deal of time in the home. No policies exist to regulate CO in the home. Many commercial home monitors sound an alarm only 20 minutes after CO concentrations reaches 70 parts per million -- nearly three times the 25 parts per million limit set by Ca/OSHA.

IMPACT: This is the first time that inhaled CO has been linked to oxidative stress, a known risk factor in many disorders, including Alzheimer's, Parkinson's, multiple sclerosis, Lou Gherig's disease and cardiovascular disease. Tobacco smoke, which contains CO, aggravates many of these diseases. The UCLA findings highlight the need for policy makers to reexamine the regulation of car exhaust, tobacco smoke, smog, and heating and cooking appliances.UCLA



HERE'S ANOTHER PORTABLE OXYGEN SYSTEM BEING RESEARCHED UNDER NHLBI SPONSORSHIP....

The beneficial effects of Long-term Oxygen Therapy (LTOT) in the home for patients with Chronic Obstructive Pulmonary Disease (COPD), and other lung diseases causing hypoxemia, are well known. The number of patients with COPD is increasing in most countries, and in the U.S., it is now one of the leading causes of death. LTOT increases a patient's survival rate and also has the potential to improve considerably a patient's quality of life.

Since LTOT must be given for as long as possible during the day, it is important to extend daily hours of oxygen therapy into the mobile period of the day. This can be achieved through the use of compact, lightweight, portable sources of oxygen gas. Thus, there exists a clear need for a new technology-based oxygen generator that satisfies all the

requirements for LTOT both within and outside the home.

Currently, providing ambulatory oxygen with LOX systems is problematic because of the cost of LOX and hence lower profit margins for suppliers. The aims of portable oxygen are to increase exercise tolerance, reduce exercise dyspnea, improve quality of life, and extend the daily hours of LTOT.

In response to the identified need, this project is specifically aimed at improving the delivery of oxygen to ambulatory patients in the home and office setting using an innovative electrochemical life support system. The technology will have a dramatic improvement in clinical benefits, patient convenience and delivery costs. The portable electrochemical system will produce on demand a supply of humidified, but otherwise pure, oxygen gas, while having a system weight less than 10 lb and system power requirements less than 600 Watts. The system will provide instantaneous start-up and it is estimated that the oxygen generator will cost less than \$1,000.

A dual-use development approach will be adopted because the portable electrochemical oxygen generator technology has both government and other commercial applications such as battlefield life support, forward medical treatment areas, casualty transport vehicles, "oxygen trickle charger" for commercial and military aircraft, and hyperbaric oxygen therapy for decompression sickness, air embolism, and carbon monoxide poisoning.

.....Lynntech, Inc.



HOME-AWAY® OXYGEN SYSTEM APPROVED BY FDA FOR EASY OXYGEN AT HOME

In-X Corporation, of Denver, CO, developer and manufacturer of home oxygen liquefaction systems received FDA Clearance today for the Home-Away® System. The Home-Away System enables patients with Long Term Oxygen Therapy (LTOT) needs to produce liquid oxygen in their home, thus eliminating the need for expensive deliveries.

"The revolutionary Home-Away System will enable patients on LTOT to remain mobile and maintain their quality of life. Additionally, it is exciting news for home healthcare providers because it eliminates costly and time-consuming deliveries while offering patients full mobility with the preferred form of ambulatory oxygen", said Doug Powell, president of In-X Corporation.

The Home-Away System works in conjunction with any In-X approved oxygen concentrator to create liquid oxygen within the patient's home. The system directs a portion of the oxygen flow from the concentrator directing it to a cryogenic cooling device, where it is condensed into liquid and stored within the system until it is ready to be transfilled into a portable liquid unit. The remaining oxygen gas produced by the concentrator is available for patient use at a flow of up to 3 lpm. The portable liquid unit is worn around the patient's waist (similar to a fanny pack); weighs just 4.2 lbs when full and provides a typical patient with 6-8 hours of mobility per fill. The Home-Away System produces enough liquid oxygen for a patient to fill the portable liquid unit 3 times per day.

In-X anticipates having the Home-Away System ready for sale to home healthcare providers in the last quarter of 2005 with

product delivery the first quarter of 2006.

.....www.rxpgnews.com



HIGH-FLOW OXYGEN IMPROVES EXERCISE PERFORMANCE IN COPD

High-flow humidified oxygen improves exercise performance in patients with chronic obstructive pulmonary disease (COPD) and severe oxygen dependency, according to the results of a prospective, nonrandomized, nonblinded study published in the October issue of *Chest*.

"Virtually all patients with COPD receiving supplemental oxygen use the nasal cannula, a low-flow system geared to the oxygen requirement at rest and with limited activity," write Wissam Chatila, MD, from Temple University School of Medicine in Philadelphia, Pennsylvania, and colleagues.

"However, at high flows (greater than or equal to 6 L/min), the nasal cannula is poorly tolerated because of nasal dryness, crusting, and epistaxis....," the authors write. "The opportunity to increase oxygen delivery during strenuous activities, e.g., pulmonary rehabilitation, may enhance cardiovascular fitness and improve dyspnea during activities."

Using a Vapotherm high-flow oxygen (HFO) delivery source, a novel device combining oxygen, pressurized air, and warm humidification to deliver tolerable flow rates up to 40 L/min through a nasal cannula, this study compared the effects of high flows of humidified oxygen to conventional low-flow oxygen (LFO) delivery at rest and during exercise in patients with COPD.

At an outpatient exercise laboratory, 10 patients with stable COPD but no exacerbation had rest and baseline recordings of work of breathing and ventilatory parameters, and they were then asked to exercise on a cycle ergometer for up to 12 minutes. Patients exercised on LFO first, followed by another period of rest, then by repeat exercise using the HFO system, set at 20 L/min and matched to deliver the same fraction of inspired oxygen (FIO₂) as that of LFO delivery.

Patients had advanced airflow obstruction, with mean FEV₁ of 23% ± 6% predicted. Mean age was 54 ± 6 years. Outcomes included tidal volume, respiratory rate, inspiratory time fraction, rapid shallow breathing index, pressure-time product measured with a pulmonary mechanics monitor, Borg dyspnea scores, pulse oximetry, blood gases, and vital signs.

Compared with LFO delivery, HFO was associated with ability to exercise longer (10.0 ± 2.4 minutes vs 8.2 ± 4.3 minutes) with less dyspnea, better breathing pattern, and lower arterial pressure. At matched FIO₂, oxygenation was higher while receiving HFO at rest and during exercise.

The authors suggest that the predominant factor in improving oxygenation is likely to be less air entrainment. The improvement in exercise capacity and reduced dyspnea with hyperoxia may result from decreased ventilatory demands, decreased dynamic end-expiratory volumes, and alteration in respiratory muscle recruitment.

Study limitations include small number of patients, lack of randomization, possible learning effect related to the protocol beginning with LFO, and inability to determine the effect of

"High flows of humidified oxygen improved exercise performance in patients with COPD and severe oxygen dependency, in part by enhancing oxygenation," the authors write. "Noninvasive ventilation and nonrebreather masks have offered some relief to patients with COPD who are challenged by increasing respiratory loads and hypoxemia; however, their use is not universal in part because of side effects and portability. The Vapotherm device might act as an intermediate form of respiratory support falling between traditional oxygen delivery via the nasal cannula and noninvasive ventilation helping patients to cope with their load."

.....CHEST



HERE'S A SIMPLE WAY TO BOOST YOUR MEMORY

If you want to sharpen your memory, attention span, and learning ability, put on your walking shoes and get going.

A study of more than 18,000 women ages 70 to 81 from the Harvard School of Public Health concluded that the more active we are, the better our cognition, reports HealthDayNews.

The study: Led by Jennifer Weuve, the Harvard team tested the women, who were all part of the long-running Nurses' Health Study, for verbal memory, attention, and other gauges of cognitive functioning. In addition, they were asked about typical physical activities in which they participated, and the researchers converted that information into what it would be in terms of miles walked.

The results: HealthDayNews reports that among the women who put in the highest of five levels of activity, which would be the equivalent of six or more hours of weekly walking at an easy pace, there was a 20 percent lower risk of cognitive impairment, compared with women in the lowest level of activity, which was the equivalent of walking less than two hours a week at an easy pace. An easy pace is walking one mile in 20 to 30 minutes. If you walk one mile in 16 to 20 minutes, then one and a half hours of weekly walking will give you the full cognitive benefits.

How does walking give your brain a workout? Weuve said there is evidence that better cardiovascular health is related to better cognitive function. Physical activity also appears to have a direct effect on the brain itself," she told HealthDayNews. "It appears to promote the production of chemicals in the brain, called nerve growth factors, that improve the brain cells' survival and growth."

.....JAMA



HEAT WAVE AFTER COLD SNAP SPELLS TROUBLE

The combination of an early heat wave so soon after a cold May and before people have had time to become acclimated to summer temperatures is always likely to cause trouble. June is the worst time of year for many asthmatic patients because pollen counts are high. With the additional risk factor of hot, close, humid weather and a high pollutant score, there is an appreciable effect upon the death rate. This increases for those with lung disease by 5.5 per cent for every degree over 21.5C (70F).

There are three especially vulnerable groups in a heat wave: the old, those with chronic heart disease and those with

respiratory troubles such as asthma and COPD, previously known as chronic bronchitis and emphysema.

Patients with asthma may have to increase their prophylactic dose of inhaled steroids and may also need to use their beta 2 agonist ventalin-type inhaler more frequently. Those who have been prescribed a Symbicort or other similar inhalers may have to increase their puffs from one or two a day to three or four.

The elderly and people with heart problems should abandon their regular brisk exercise and take refuge in the shade or put the fan on.

Everyone should take plenty of fluids, preferably water, because large quantities of coffee and alcohol have a dehydrating effect.Times Newspapers Ltd.



FDA APPROVES NEW ANTIBIOTIC FOR RESISTANT BACTERIA

Hospital-Acquired Infections Targeted

The Food and Drug Administration approved a new treatment yesterday for hospital patients with serious bacterial infections, including those resistant to most other antibiotics.

The new drug, called Tygacil, is from the first new class of antibiotics to be marketed in several years. The manufacturer, Wyeth Pharmaceuticals, said the intravenous drug will be used as a first-line treatment for stomach and skin infections and is effective against enough different bacteria to be used before doctors know which ones are causing the infection.

"Community and hospital-acquired infections have the real potential to become a major public health crisis," said Evan Loh, a Wyeth vice president. "The need for more antibiotics is acute."

The announcement was welcomed by doctors, especially those who are regularly confronted with bacterial infections that are resistant to existing antibiotics.

"It's very difficult to know how to treat and manage badly infected patients today," said Scott R. Schell, a professor of surgery at the Cancer Institute of New Jersey. "For the worst infections and sickest patients there are few options, so any new treatment is very appreciated."

The Centers for Disease Control and Prevention estimates that every year 2 million Americans acquire infections while in hospitals, and 90,000 die. About 70 percent of the hospital infections are resistant to at least one class of antibiotics.

The new drug is from a class of medicines called glycolcyclines, which is related to the tetracycline class. The two are different enough, however, that Tygacil can be used to treat infections that are resistant to tetracycline, said Janice Soreth, director of the FDA's division of anti-infective drugs.

Soreth also said the approval marked an important advance because "it's another option, another choice out there, and there are a limited number of options."

Developing new antibiotics is time-consuming and expensive, and drug companies have been slow to come up with new types in recent years. Wyeth officials said yesterday that the molecule that became Tygacil was first synthesized in 1992, and clinical development began in 1997.

"Few broad-spectrum antibiotic agents are currently in development," the company said in a statement. "Antibiotic development has slowed to the point that FDA has had few opportunities to approve new agents. In fact, development and approvals of new antibacterial agents have decreased by 56 percent over the past 20 years."

Although new antibiotics have been few and far between, the use of existing drugs has grown markedly in both human medicine and to treat and promote the growth of farm animals. Because bacteria will eventually grow resistant to any antibiotic they encounter frequently, the pool of resistant bacteria is expanding fast.

Schell, who spoke on a Wyeth teleconference but said he had no relationship to the company, said Tygacil is especially welcome because it can defeat a number of broadly resistant bacteria such as methicillin-resistant *Staphylococcus aureus*, and because it is effective against a wide range of bugs, including *E. coli*.

"It's important to get the right antibiotic because if you don't choose right the first time, the patient does poorly," he said. It can take one to two days of laboratory work to determine exactly what bacteria is causing an infection.

The company said it is exploring other uses for the drug, including fighting pneumonia and some pediatric infections.

.....The Washington Post



EXERCISE-INDUCED ASTHMA MORE CLEARLY LINKED TO HIGH-SALT DIET

An Indiana University professor may have uncovered the mechanisms by which high-salt diets can trigger exercise-induced asthma, offering the most complete picture to date of how dietary factors can both aggravate and alleviate the symptoms of this common condition.

The study by exercise physiologist Timothy Mickleborough and his research team in IU Bloomington's Department of Kinesiology demonstrated for the first time that modifying salt intake for two weeks alters airway inflammation and the flow of oxygen into the bloodstream, termed the diffusion capacity of the lungs.

"These findings show that modifying your diet has the potential to modify a disease state," Mickleborough said. The findings appear in the June issue of *Medicine & Science in Sports & Exercise*, and Mickleborough presented them on June 3 at the annual conference of the American College of Sports Medicine in Nashville, Tenn.

Exercise-induced asthma, also called exercise-induced bronchoconstriction, is a condition in which vigorous physical activity triggers an acute narrowing of the airway afterward, making breathing difficult. Up to 90 percent of people with asthma have EIA, in addition to as much as 10 percent of the general population without asthma and more than 10 percent of elite athletes. EIA typically is treated with medications, some of which are banned in international competition.

The randomized, double-blind, crossover study involved 24 people with physician-diagnosed asthma and EIA. Study participants on the low-salt diet consumed 1,446 milligrams of

sodium per day. Participants on the high-salt diet consumed 9,873 milligrams of sodium per day, an amount Mickleborough described as typical for many adults.

Participants on the high-salt diet showed a dramatic decline in lung function after physical activity. Twenty minutes after exercising, the forced expiratory volume in 1 second (FEV1) -- a measure of lung function -- of participants on the high-salt diet had dropped by 27.4 percent compared to just 7.9 percent for participants on the low-salt diet.

Mickleborough attributed this to a combination of factors caused by the high-salt diet, including high blood pressure and increased blood volume. These factors can cause pulmonary edema, which can lead to airway obstruction. Mickleborough said a drop of 10 percent or more in post-exercise FEV1 is considered abnormal (EIA positive), so the participants with the low-salt diet essentially eliminated their EIA symptoms.

Mickleborough and his team also found a higher percentage of airway cells, which have been implicated in the pathogenesis of asthma and EIA, in the sputum of study participants on the high-salt diet, along with more proinflammatory mediators, which can cause constriction of the airways.

Mickleborough has been studying the impact of diet on exercise-induced asthma for eight years. His earlier research found that increased consumption of omega-3 polyunsaturated fatty acids, commonly found in fish oil, also could reduce EIA symptoms in asthmatics after just three weeks.

.....Indiana University



CHANGES IN INHALER DEVICES FOR ASTHMA AND COPD

Asthma and chronic obstructive pulmonary disease (COPD) involve chronic inflammation and constriction of the bronchioles. Optimal therapy for many patients requires control of both pathologic mechanisms through the use of inhaled bronchodilators and corticosteroids. Bronchodilator and corticosteroid inhalers eject a fine mist of medication which works

directly on the bronchiole mucosa and smooth muscle when used properly. These inhaled medications are intended to exert localized, sitespecific therapeutic effects on the bronchioles.

Bronchiole smooth muscle is innervated by both sympathetic (beta-2 adrenergic) and parasympathetic (cholinergic) autonomic nerves, which exert opposite effects on the airways. Stimulation of beta-2 adrenergic nerve fibers causes relaxation of bronchiole smooth muscle, leading to bronchodilation. Conversely, stimulation of the parasympathetic or cholinergic nerve fibers causes contraction of bronchiole smooth muscle, leading to bronchoconstriction. Bronchospasm, a major component of asthma and COPD, limits airflow and can be relieved by bronchodilator inhaler medication. To exert bronchodilation, medications work by stimulating beta-2 adrenergic nerve receptors or blocking the cholinergic nerve receptors in bronchiole smooth muscle. Bronchodilator inhalers, therefore, are either beta-2 adrenergic agonists or anti-cholinergic medications.

Differences between the pathologic mechanisms of asthma and COPD dictate the implementation of distinctively different treatment methods. Asthma is primarily a chronic inflammatory disease involving episodes of reversible bronchoconstriction. Because inflammation is the main pathologic mechanism, anti-inflammatory agents (specifically inhaled corticosteroids) are first-line therapy in asthma. To prevent and counteract reversible episodes of bronchospasm, beta-2 adrenergic inhalers directly dilate the bronchioles. In contrast, bronchoconstriction in COPD is progressive, largely cholinergic mediated, and only partially reversible. Because bronchoconstriction is a major pathologic mechanism in COPD, bronchodilators (specifically anticholinergic inhalers) are first-line pharmacologic therapy.

.....rednova.com.



ATS STATEMENT ON HOME CARE FOR RESPIRATORY DISORDERS

In the just published "American Thoracic Society Statement on Home Care for Patients with Respiratory Disorders," an ad hoc expert subcommittee pointed out that either reducing the frequency of or the length of hospitalization is the key to lowering the total cost of chronic obstructive pulmonary disease (COPD) which affects 11.2 million U.S. adults and cost the nation \$37.2 billion during 2004.

Published in the second issue for June 2005 of the ATS peer-reviewed American Journal of Respiratory and Critical Care Medicine, the new statement points out that home care services can offer great potential for patients with respiratory disorders, especially pediatric and geriatric patients, by providing services and equipment at the place of residence for individuals and families who have needs resulting from acute illness, long-term health conditions, permanent disability, or terminal illness.

In the United States, home care includes home health care that offers episodic, post-acute illness assistance on an intermittent basis; hospice care that is palliative, end-of-life care for the terminally ill; chronic home care assistance directed at private duty aid offered on an hourly basis; and, in the home, the provision of and assistance with medical equipment such as oxygen supplies, respiratory equipment, nebulized medications, infusion therapy, and other in-home medical supplies.

According to the report, the most common diagnosis of patients with respiratory disorders referred for home health care is COPD. Slightly over 11 percent of the 7.6 million patients who received home health care in 1998 had respiratory system disease as their primary diagnosis. COPD and pneumonia are, respectively, the fourth and fifth most frequent reasons for hospital discharge to home care for Medicare patients.

The expert subcommittee pointed out that chest physicians and pulmonologists need to recognize that earlier hospital discharge, or avoidance of hospital care altogether, are important premises upon which home health care referrals can be made.

.....American Thoracic Society



BREATH OF FRESH AIR FOR OXYGEN SERVICE Plans to improve home oxygen services for 60,000

18 patients across England were announced by the Government.

Health Minister Jane Kennedy announced that four companies had been awarded contracts to modernise the services across England by the end of the year.

"The new services will ensure that patients have access to the latest equipment that meets their individual needs and helps to improve their quality of life. Patients want to be at home and we want them to have the confidence and support to manage their symptoms at home. I know that patients and the NHS want to see change and I want to see this happen as soon as possible. Many patients receiving this service have chronic obstructive pulmonary disease, which represents over 10% of all acute admissions every year and costs the NHS around £600 million."

"A better home oxygen service will help to reduce emergency admission to hospitals," Ms Kennedy said.

The Department of Health said the modernised service would put an end to the current fragmented system. Patients would have round-the-clock access to expert advice and support to make use of the latest equipment --including lighter cylinders, liquid oxygen and for the first time portable systems to allow greater mobility.

The four companies to be awarded the contracts are Air Products, Allied Oxycare/Medigas, BOC and Linde.

Professor Wisia Wedzicha, of the British Thoracic Society, said: "The introduction of the new home oxygen service is the most exciting development in the management of patients with chronic respiratory disability and respiratory failure for the past 20 years. This service has been much awaited by patients, physicians and nurses."

Dame Helena Shovelton, of the British Lung Foundation, added: "Moving to this new system of home oxygen provision should result in a better service with a wider range of choice for patients. The British Lung Foundation has been working with the Department of Health to achieve this improvement and is delighted that people who need long term oxygen therapy will have access to lightweight equipment that will enable them to go out more easily and so lead as full a life as possible."

.....news.scotsman.com



EARLY DETECTION METHOD FOR A RESPIRATORY VIRUS

In what may be one of the first medical uses of nanotechnology, a chemist and a doctor who specializes in infectious childhood diseases have joined forces to create an early detection method for a respiratory virus that is the most common cause of hospitalization among children under five.

Respiratory syncytial virus (RSV) sends about 120,000 children to the hospital in the United States each year. Although it is only life-threatening in one case out of every 100, it infects virtually all children by the time they are five. Few children in the U.S. die from RSV,

But it also attacks the elderly, causing some 17,000 to 18,000 deaths annually. Individuals with impaired immune

systems are another highly susceptible group. Vanderbilt researchers report that not only can a quantum dot system detect the presence of RSV particles in a matter of hours, rather than the two to five days required by current tests, but it is also more sensitive, allowing it to detect the virus earlier in the course of an infection

Current methods of detecting the virus can take from two to six days, postponing effective treatment. The new, high-tech method uses multi-colored, microscopic fluorescent beads, called quantum dots, which bind to molecular structures that are unique to the virus's coat and the cells that it infects. In a paper appearing in the June issue of the journal *Nanoletters*, the Vanderbilt researchers report that not only can a quantum dot system detect the presence of particles of the respiratory syncytial virus (RSV) in a matter of hours, rather than the two to five days required by current tests, but it is also more sensitive, allowing it to detect the virus earlier in the course of an infection.

“The problem with current detection technologies is that they take too long,” says Professor of Pediatrics James E. Crowe, Jr. who collaborated with Associate Professor of Chemistry David W. Wright in the development. “When a patient with a respiratory illness comes in to the doctor, emergency room or clinic, some times their symptoms are caused by bacteria and some times they are caused by viruses. There are specific medicines to treat some viral infections and there are definitely antibiotics to treat bacteria. Yet current detection tests take up to five days to tell you if a virus is present and another day or so to tell you which virus it is.”

Crowe lists three potential benefits for such an early detection system. It can:

-- Increase the proper use of antiviral medicines. Although such medicines have been developed for some respiratory viruses, they are not used often as therapy because they are only effective if given early in the course of infection. By the time current tests identify the virus, it is generally too late for them to work.

-- Reduce the inappropriate use of antibiotics: Currently, doctors often prescribe antibiotics for respiratory illnesses. However, antibiotics combat respiratory illness caused by bacteria and are ineffective on viral infections. An early virus detection method would reduce the frequency with which doctors prescribe antibiotics for viral infections inappropriately, thereby reducing unnecessary antibiotic side-effects and cutting down on the development of antibiotic-resistance in bacteria.

-- Allow hospital personnel to isolate RSV patients: RSV is extremely infectious so early detection would allow hospital personnel to keep the RSV patients separate from other patients who are especially susceptible to infection, such as those undergoing bone-marrow transplants.

It is much easier to get approval for a new diagnostic test than a new drug. So the researchers estimate that it will take only two to three years to develop and validate the new test. “All the components are off-the-shelf,” Wright adds, “so any one can put together one of these detection system if they want to.”

The system should also be relatively inexpensive. The most

costly ingredient is the quantum dots: A small bottle that contains enough of the material for about 200 tests costs \$300.

As a result, this could be one of the earliest medical applications of nanotechnology, Wright and Crowe say.

The researchers' next step will be to develop a quantum dot cocktail capable of simultaneously detecting the presence of at least five major respiratory viruses: influenza A and B, parainfluenza and metapneumovirus, in addition to RSV. This should be fairly straightforward, Wright says. In the current paper, Wright and Crowe demonstrate that they can use two different colors of quantum dots simultaneously. The colored quantum dots are attached to different “linker” molecules that bind to different RSV surface structures.

“It's not much of a jump from two to five,” Wright says. Quantum dots are available in a dozen different colors, and antibodies specific to the other four respiratory viruses have been identified and can be used as linker molecules. Such a test would be able to diagnose more than 90 percent of all the cases of viral respiratory infection, he says.

The existence of such a test could encourage the development of improved therapies for respiratory viruses, Crowe says. Without a good diagnostic for a specific viral infection, drug companies don't have much motivation to develop effective treatments because doctors are unlikely to prescribe them very often.

Currently, there are three diagnostic tests available for identifying respiratory viruses like RSV. The “gold standard” involves incubating an infected sample in a tissue culture for five days and then using a fluorescent dye to test for the presence of the virus. The main problem with this technique is that the virus is multiplying in the patient at the same time as it is growing in the culture.

This has caused many hospitals to switch to a technique called real time PCR, which is extremely sensitive but still takes 36 to 48 hours because of the need for a highly trained molecular biologist to conduct the test in a reference laboratory. There is also a third method, called the antigen test, which only takes 30 minutes. However, it is not sensitive enough to detect the presence of the virus at the early stages of an infection.

By comparison, the new quantum dot method takes one to two hours and is even more sensitive than real time PCR. “It can detect the presence of RSV within an hour after the virus is added to a culture,” says Wright.

“There is a tremendous amount of hype about nanotechnology,” says Crowe, “but this is a real-world, practical application that's here now.”

The participation of the Wright lab was made possible by funding from the National Science Foundation and Vanderbilt University. That of the Crowe lab was supported by grants from the National Institutes of Health and the March of Dimes.

.....Vanderbilt University



STEPPING OFF THE SCALE

People who are obese walk with surprising economies of scale. Both the stress they place on their knees and the energy

they expend per kilogram are less than proportional to how much excess weight they carry, according to recent studies.

The finding suggests a way to help heavyset men and women lose weight, though with a possible drawback. The authors of the new work say that obese people might force themselves to walk in ways that take more energy, which would help them lose weight but might also elevate their risk of developing osteoarthritis in their knees.

Being obese obviously adds to the mass that someone must move while walking. But the condition burdens locomotion in other ways. For example, obese people have relatively heavy thighs, so swinging a leg forward with each stride requires considerable effort. Their thighs also tend to be thick, which forces them to swing their legs wide to keep them apart, and their footsteps tend to fall farther apart from side-to-side, which means that a good deal of their motion does not translate into forward momentum.

Those characteristics make walking more energetically expensive for the obese than for people of normal weight—not only overall but also on a per-kilo basis—according to locomotion researcher Rodger Kram of the University of Colorado in Boulder.

Studies that simulate obesity in nonobese people suggest that putting on pounds substantially increases the metabolic cost of walking. When lean women walk with heavy, bulky gear strapped to their legs and bodies, Kram says, "their energy costs skyrocket."

But in recent experiments, Kram and his University of Colorado colleague Raymond C. Browning found that obese women somehow avoid paying most of the expected penalty. The heavy women seem to have learned to carry their bodies efficiently.

That's unfortunate in one sense, Browning says, because high metabolic efficiency means that some calories get conserved when they'd otherwise be burned. By understanding how obese people conserve energy and by encouraging them to alter their walking motion to neutralize energy-saving adaptations, the researchers say they might be able to promote weight loss.

In their study, Kram and Browning asked 10 obese women and 10 women of normal weight to walk at various speeds on a treadmill for 5 minutes at a time. During the trials, the researchers monitored oxygen and carbon dioxide in each volunteers' breath and computed how many calories she burned at her most energy-efficient speed. That speed corresponded closely to the rate that each woman chose to move on a level sidewalk.

In the May Obesity Research, the researchers report that, compared with the other volunteers, the obese ones spent only 11 percent more calories per kilogram when moving at optimal speed over a given distance. Given the difference in size between the groups, the metabolic cost could have been more than 100 percent greater for the obese women, the researchers say.

"That suggests [the obese volunteers] are changing their gait to conserve energy," Browning says. He's now using video cameras and other equipment to test that idea by comparing the

gaits of the obese and nonobese volunteers.

PAYING THE PRICE

Paul DeVita, a biomechanist at East Carolina University in Greenville, N.C., says he's surprised by how small the metabolic cost increase is, but he doesn't question the findings. He says he suspects that people change their gait subconsciously as they become obese. Energy efficiency may not be the only motivator, he adds.

In an earlier study, DeVita and Timor Hortobágyi found that a person who weighs twice as much as another experiences no greater torque in the knees when both walk at the same, reasonable speed. When the obese volunteers were allowed to walk at a slower speed, which they found more comfortable, they exerted even less force on their knees than people in the other group did at the faster pace. Greater force on the knee had previously been presumed to explain why obese people are susceptible to osteoarthritis in that joint.

Furthermore, DeVita and Hortobágyi reported in 2003, obese volunteers walked with shorter strides and straighter knees than did other people. Those behaviors reduce certain stresses on the joint, DeVita says.

DeVita and Hortobágyi's findings suggest that teaching obese people to use a less energy-efficient gait might not be a good idea, assuming it's even possible, Browning says.

For example, walking quickly burns more calories than does covering the same ground at a comfortable speed. But since it also increases the skeletal impact of each footfall, it might raise the risk of osteoarthritis, he says. Walking slower than normal reduces joint stress, but it also cuts down cardiovascular benefits.

However, certain motions might enable obese people to increase their metabolic output without putting undue strain on their joints. "We may be able to get around their energy-conserving mechanism by making them walk uphill," Browning says.

That could offer a second benefit, as well. Compared with walking downhill or on a level plane, DeVita says, "walking uphill has a gentler impact."

Other research suggests that uphill and downhill exercise have different effects on health and that uphill workouts improve the body's processing of cholesterol. Further studies could show that climbing slopes brings people closer to the peak of metabolic health.

.....Science News



IS HOUSEWORK CONSIDERED EXERCISE?

The good news is yes! Housework is considered exercise!

You don't have to spend hours each day in the gym to benefit from physical activity. Any kind of activity, from vacuuming to unloading groceries, can help you reach your fitness goals. The benefit you get from exercise depends on its frequency, intensity and duration. Doing less-vigorous housework activities for more time can give you the same benefits as doing more-vigorous housework activities for less time.

Start out by adding a little more vigor into those things you

do every day to increase the physical benefits you get out of them:

Routine Tasks

Making the bed

Taking out the trash

Vacuuming

Unloading groceries

Putting them away

Cleaning the tub

Actively Improved Tasks

Increase the number of times you walk around the bed. Walk quickly or stretch farther across the bed.

Carry the trash can instead of rolling or dragging it. Carry less trash and make more trips.

Really push and pull, switching hands to work both arms.

Hold grocery bags, cans, bottles, or milk jugs in your hands; curl your hands, bending your arms at the elbows.

Make more trips from the car into the house. Bend your knees to reach bottom shelves, stretch for top shelves. Make more trips, especially up or down the stairs.

Scrub the tub or shower, using a circular motion in both directions and alternating hands.

Next, add the following activities once or twice a week to give you an even greater benefit:

Washing and waxing a car: 45-60 minutes

Washing windows or floors: 45-60 minutes

Gardening or pushing a mower: 30-45 minutes

Raking leaves: 30 minutes

Remember, this information does not replace your doctor's advice. Talk to your doctor about a diet and exercise program that's appropriate for you.



CHRONIC INFECTION MAY CONTRIBUTE TO FRAILTY IN OLDER WOMEN

Older women with chronic cytomegalovirus (CMV), a lifelong viral infection, were found to have more than triple the risk of being frail than those who did not have the infection, as reported in the *Journal of the American Geriatrics Society*. This is the first demonstration to show an association between CMV and frailty syndrome.

The study, conducted at Johns Hopkins School of Medicine and Johns Hopkins Bloomberg School of Public Health, included over 700 female participants aged 70 to 79 years. It is unique because it links an infection acquired earlier in life with functional consequences in old age.

Further data showed that women who had both the viral infection and high levels of interleukin-6 (IL-6), a marker of inflammatory response, were even more likely to be frail than those who had either alone.

"It is not clear why, with age, some people become frail, but frailty has been linked to inflammation," said Heidi N. Schmaltz, MDCM, lead author of the study. "Patients who are frail are more likely to be hospitalized, fall, develop disability, and die than their peers. Thus, it is critical to understand what causes people to become frail and what potential treatments could

decrease risk of poor outcomes in those who are frail, particularly with the aging population."

While CMV is a common lifelong infection, it usually does not cause symptoms in healthy adults. Currently, CMV infections are not initially asked about in clinical practice. Researchers suggest that that more funding for research into the development of frailty and disability is essential as the population ages.

.....*Journal of the American Geriatrics Society*



DIAGNOSING SLEEP/WAKE PROBLEMS IN LUNG VOLUME REDUCTION SURGERY PATIENTS

Polysomnography could show whether LVRS patients have fewer respiratory-related arousals, fewer apnea episodes, and a shorter duration of apnea episodes after surgery.

The resurgence of a surgery nearly 50 years old, lung volume reduction surgery (LVRS), has restored a good quality of life to many people with emphysema. In this surgery, damaged lung tissue is removed in order to reduce dyspnea. Studies show that, after the surgery, pulmonary function improves to the point that many people are able to resume everyday activities such as walking, climbing stairs, and getting dressed. Does improved pulmonary function continue into sleep? Indirect evidence suggests so.

The lungs contain an estimated 300 million alveoli. Each alveolus is surrounded by a network of capillaries. This juxtaposition allows oxygen to diffuse from the alveoli into the capillaries and carbon dioxide to diffuse from the capillary blood into the alveoli. In emphysema, the alveoli are progressively destroyed. One consequence of the destruction is a loss of alveolar elasticity so that the alveoli can easily stretch during inhalation but not recoil sufficiently during exhalation to expel air. Air remains trapped in the alveoli resulting in carbon dioxide being rebreathed with each breath and distention of the alveoli. Distention of the alveoli then increases the volume of the lung. The rib cage expands to compensate for the increased lung size, resulting in a barrel-chested appearance. The increased lung size pushes the diaphragm downward, hindering its ability to rise and fall during respiration. This impaired diaphragmatic motion forces the patient to take shallow breaths. Another complication of the increased lung size is that the rib cage is less able to exert a pulling force on the surface of the lungs during inspiration. Normally, this pulling force would expand the alveoli by causing an inrush of air. With the rib cage less mobile, the alveoli cannot expand sufficiently and gas exchange is impaired.

.....rtmagazine.com



"DRINK AT LEAST 8 GLASSES OF WATER A DAY" - REALLY?

Dartmouth Professor Finds No Scientific Evidence for '8 x 8'

It has become accepted wisdom: "Drink at least eight glasses of water a day!" Not necessarily, says a DMS physician

Heinz Valtin, MD. The universal advice that has made guzzling water a national pastime is more urban myth than medical dogma and appears to lack scientific proof, he found.

In an invited review published online by the American Journal of Physiology August 8, Valtin, professor emeritus of physiology at Dartmouth Medical School, reports no supporting evidence to back this popular counsel, commonly known as "8 x 8" (for eight, eight-ounce glasses). The review will also appear in a later issue of the journal.

Valtin, a kidney specialist and author of two widely used textbooks on the kidney and water balance, sought to find the origin of this dictum and to examine the scientific evidence, if any, that might support it. He observes that we see the exhortation everywhere: from writers, nutritionists, even physicians. Valtin doubts its validity. Indeed, he finds it, "difficult to believe that evolution left us with a chronic water deficit that needs to be compensated by forcing a high fluid intake."

The 8 x 8 rule is slavishly followed. Everywhere, people carry bottles of water, constantly sipping from them; it is acceptable to drink water anywhere, anytime. A pamphlet distributed at one southern California university even counsels its students to "carry a water bottle with you. Drink often while sitting in class..."

How did the obsession start? Is there any scientific evidence that supports the recommendation? Does the habit promote good health? Might it be harmful?

Valtin thinks the notion may have started when the Food and Nutrition Board of the National Research Council recommended approximately "1 milliliter of water for each calorie of food," which would amount to roughly two to two-and-a-half quarts per day (60 to 80 ounces). Although in its next sentence, the Board stated "most of this quantity is contained in prepared foods," that last sentence may have been missed, so that the recommendation was erroneously interpreted as how much water one should drink each day.

He found no scientific studies in support of 8 x 8. Rather, surveys of fluid intake on healthy adults of both genders, published as peer-reviewed documents, strongly suggest that such large amounts are not needed. His conclusion is supported by published studies showing that caffeinated drinks, such as most coffee, tea and soft drinks, may indeed be counted toward the daily total. He also points to the large body of published experiments that attest to the capability of the human body for maintaining proper water balance.

Valtin emphasizes that his conclusion is limited to healthy adults in a temperate climate leading a largely sedentary existence - precisely, he points out, the population and conditions that the "at least" in 8 x 8 refers to. At the same time, he stresses that large intakes of fluid, equal to and greater than 8 x 8, are advisable for the treatment or prevention of some diseases, such as kidney stones, as well as under special circumstances, such as strenuous physical activity, long airplane flights or hot weather. But barring those exceptions, he concludes that we are currently drinking enough and possibly even more than enough.

Despite the dearth of compelling evidence, then, What's the harm? "The fact is that, potentially, there is harm even in water," explains Valtin. Even modest increases in fluid intake can result in "water intoxication" if one's kidneys are unable to excrete enough water (urine). Such instances are not unheard of, and they have led to mental confusion and even death in athletes, in teenagers after ingesting the drug Ecstasy, and in ordinary patients. And he lists other disadvantages of a high water intake: (a) possible exposure to pollutants, especially if sustained over many years; (b) frequent urination, which can be both inconvenient and embarrassing; (c) expense, for those who satisfy the 8 x 8 requirements with bottled water; and (d) feelings of guilt for not achieving 8 x 8. Other claims discredited by scientific evidence that Valtin discusses include:

Thirst Is Too Late. It is often stated that by the time people are thirsty, they are already dehydrated. On the contrary, thirst begins when the concentration of blood (an accurate indicator of our state of hydration) has risen by less than two percent, whereas most experts would define dehydration as beginning when that concentration has risen by at least five percent.

Dark Urine Means Dehydration. At normal urinary volume and color, the concentration of the blood is within the normal range and nowhere near the values that are seen in meaningful dehydration. Therefore, the warning that dark urine reflects dehydration is alarmist and false in most instances.

Is there scientific documentation that we do not need to drink "8 x 8"? There is highly suggestive evidence, says Valtin. First is the voluminous scientific literature on the efficacy of the osmoregulatory system that maintains water balance through the antidiuretic hormone and thirst. Second, published surveys document that the mean daily fluid intake of thousands of presumably healthy humans is less than the roughly two quarts prescribed by 8 x 8. Valtin argues that, in view of this evidence, the burden of proof that everyone needs 8 x 8 should fall on those who persist in advocating the high fluid intake without, apparently, citing any scientific support.

Finally, strong evidence now indicates that not all of the prescribed fluid need be in the form of water. Careful peer-reviewed experiments have shown that caffeinated drinks should indeed count toward the daily fluid intake in the vast majority of persons. To a lesser extent, the same probably can be said for dilute alcoholic beverages, such as beer, if taken in moderation.

"Thus, I have found no scientific proof that absolutely every person must 'drink at least eight glasses of water a day'," says Valtin. While there is some evidence that the risk of certain diseases can be lowered by high water intake, the quantities needed for this beneficial effect may be less than 8 x 8, and the recommendation can be limited to those particularly susceptible to the diseases in question.Dartmouth News



ALL ABOUT PREDNISONE

Many patients are not as well informed about prescription medications as they ought to be. We believe the more you know about your medications, the better. This leaflet has been written to help you understand more about what prednisone is

and the importance of taking it properly. If any of the information below causes you special concern or if you want additional information about prednisone and its use, check with your doctor or pharmacist. Remember to keep all prescription drugs out of reach and sight of children when not in use. Store all medicines in their original labeled containers and always read the label before using.

WHAT IS PREDNISONE?

Prednisone is a steroid. Steroids are a group of hormones with similar chemical structures. They are normally produced by your adrenal glands, located on top of your kidneys, and your reproductive organs (ovaries and testicles). Steroids help control metabolism, inflammation, immune function, salt and water balance, development of sexual characteristics and your ability to withstand the stress of illness and injury.

One of the steroids produced by the outer portion of the adrenal glands is called cortisone. It normally helps regulate the body's salt and water balance and reduces inflammation. Introduced in 1955, prednisone is a man-made replica of cortisone. The adrenal glands normally produces an amount of steroids equivalent to about 5 mg. of prednisone a day. When prescribed in doses that exceed natural levels, prednisone suppresses inflammation and can help treat a variety of diseases such as severe allergies or skin problems, asthma, arthritis, ulcerative colitis, and Crohn's disease. Prednisone is also used to help prevent rejection of organ transplants.

Prednisone is the generic form; some common brand names are Deltasone, Meticorten, Orasone, and SK-Prednisone.

WHAT PREDNISONE IS NOT

Prednisone is not the same as the dangerous anabolic steroids used by weight lifters to increase muscle mass. It is not a sex hormone like testosterone or estrogen and does not cause sexual dysfunction. Prednisone is not addictive. It does not cause drowsiness and in the usual doses will not affect your driving or working. There is no special food interaction and mild alcohol consumption is not a problem on prednisone.

HOW DOES PREDNISONE WORK?

The exact mechanism of how prednisone works is not known.

TAKING PREDNISONE PROPERLY

Unless instructed otherwise, prednisone should be taken all at once with breakfast. Prednisone is not to be taken randomly during the day. This minimizes the risk of adrenal gland suppression and atrophy. (When high doses are required, the dose may have to be split between morning and evening doses for short periods of time.) In some patients prednisone can be given at twice the dose every other morning. This doesn't work for everyone, but when possible, allows your system a brief, yet helpful, reprieve from the drug.

Prednisone is best taken with food. Prednisone can irritate the stomach lining and therefore should be taken with food which serves as a buffer and reduces the irritation. Tell your doctor if you have a tendency to form peptic ulcers since this may require special care.

Take the dose as prescribed. There is no fixed rule for the correct dose of prednisone. Each case is different. Your doctor

will determine what initial dose is best for you depending on the activity of your disease, your age, weight, any other medical conditions you may have, and your response to treatment. Do not alter the dose on your own without your doctor's consent. Fine tuning of your prednisone dosage will take place as your doctor follows your progress. The goal, of course, is to control your illness with the lowest effective dose of prednisone possible for the shortest period of time. Your doctor will routinely reassess what dose is necessary for you.

Don't skip doses. This is not a casual drug and taking it inconsistently can be very dangerous. If you forget a dose, it is safe to take the normal dose of the medication as soon as you remember and resume your normal schedule the following morning. If you do not remember until the next day, skip the missed dose.

Do not abruptly stop taking this medication on your own. If prednisone is taken for months and years, the adrenal glands within the body lose their ability to produce steroids naturally. In fact, the adrenal glands can shrink in size. If you have been on prednisone for more than one month, it is important that you do not stop it "cold turkey." This can cause an acute withdrawal reaction that can lead to a crisis situation. Prednisone must be slowly tapered under your doctor's supervision. When you travel, always carry a supply of medication with you. When flying, keep all your medications in your carry-on baggage. If your checked luggage is lost or delayed, you won't miss a dose.

If you have taken prednisone for more than a month, you may require an extra dose during physically stressful situations such as major surgery or severe infections. These "booster" doses can be given either by vein or by mouth. Usually the dose need be raised for only a day or so. This may be true even up to one year after you have discontinued the medication. This point is well known to doctors, but it is important for you to remember if you are away from your doctor and require major surgery or develop a severe infection. If you are on long term prednisone therapy, carry a notice with you on a Medic-Alert bracelet or in your wallet. (Medic-Alert Foundation can be contacted at their website at www.medicalert.org at their toll-free number 800-825-3785.) Be sure that all your doctors know that you are taking chronic prednisone therapy.

WHAT ARE THE SIDE EFFECTS?

In 1948, physicians at the Mayo Clinic were the first to use steroids to treat disease. They gave cortisone to patients crippled by severe rheumatoid arthritis and were amazed by the results after just a few days of use. People, who couldn't rise from a chair, shave, open a door or lift a cup, now could walk and even dance. Cortisone was hailed as a "miracle drug." Unfortunately, it was too good to be true. Problems soon emerged. Patients taking cortisone in doses high enough to relieve inflammation routinely experienced harmful side effects. Physicians now recognize that prolonged use of cortisone-like drugs like prednisone can cause many side effects. But when serious disease occurs, the benefit of prednisone usually outweighs the potential risks. For difficult

to manage conditions, prednisone can still be a miraculous medication. In general, the risk of side effects depends on the length of time you take prednisone and the amount you take. You can help limit side effects by taking the medication exactly as prescribed and reporting any problems to your doctor.

1. Weight gain

Usually the most dreaded of prednisone's side-effects, increased appetite and weight gain are seen to some degree by nearly all patients. The amount of weight gain varies from individual to individual. In addition to causing weight gain, prednisone also tends to redistribute body fat to places that are undesirable, particularly the face (moon face), back of the neck (buffalo hump), and abdomen. The higher the dose and the longer the treatment, the greater the effect. To some extent these changes can be minimized by exercise and the dietary changes described below. If you find this confusing, a consultation with a registered dietitian or nutritionist may be helpful. Ask your doctor for a recommendation.

Avoid salt

Most of us consume much more salt (sodium chloride) than our body needs. Normally, our kidneys keep our body in balance any excess salt is excreted in the urine. Prednisone causes sodium retention and potassium loss which may lead to fluid retention, weight gain, bloating and low blood potassium levels. In some patients, this can cause high blood pressure or worsen a pre-existing condition. We suggest a no-added salt diet and avoidance of highly salted pre-packaged convenience foods. Use fresh herbs whenever possible. Read food labels. Don't add salt to cooking and remove the salt shaker from your table. Instead use low-salt spices to add flavor to your meals. Ask your doctor about using salt-substitutes which are helpful since they contain extra potassium. It may be helpful to add high potassium foods such as bananas, citrus fruits, melons, and tomatoes to your diet. Be sure that your blood pressure and blood tests are checked regularly.

Avoid fat

Most Americans also eat too much fat. Fat has over twice the calories per gram than proteins and carbohydrates. By limiting the fat in your diet, you automatically reduce the calories and may lower your blood cholesterol at the same time. With the new food labels, it is easy these days to find low-fat items in your supermarket.

Avoid simple carbohydrates

Most foods contain some fat, protein, and carbohydrates. Carbohydrates (sugars and starches) can be either simple molecules or complex molecules. Avoid simple carbohydrates which are digested too quickly and leave you hungry. Complex carbohydrates are more satisfying since they must be broken down by the digestive process and are absorbed more slowly into your system. Simple carbohydrates are foods like candy, cakes, pies, white bread. Complex would include whole wheat bread, rice, beans, sweet potatoes, high fiber cereals, sugar-free candies.

Small frequent feedings

To combat increased hunger, snack frequently on low-calorie foods such as fruits, vegetables, low fat dairy products, low salt rice cakes, and sugar free candies. Instead of

three large meals, eat smaller more frequent meals.

Eating out

When eating out, tell the waiter what you need. Don't be embarrassed or apologetic. Just ask directly for what you want. In our health conscious culture, most restaurants are used to special requests - just tip accordingly. When flying, call the airlines and request a low-fat low-salt meal in advance. They are quite prepared to help you. If you are in a situation where a special meal is not possible, don't panic. Eating salty high fat or sugary foods occasionally is not going to make much difference. Just enjoy them in moderation and be more careful the next day.

2. Raising Blood Sugar

Another reason to avoid sugary foods is the fact that prednisone has a tendency to raise the level of glucose, or sugar, in the blood. In most individuals, this has little significance. However, in diabetics or those with a history of "borderline" diabetes, the rise in blood sugar can be significant. Overweight individuals, pregnant women, and those with a family history of diabetes may also be at risk. Some diabetics who have been previously controlled by diet or pills may have to switch to insulin for a short time. Fortunately, this rise in blood sugar usually resolves when the prednisone dose is decreased or discontinued. Make sure your doctor knows if you are diabetic and all patients on prednisone should have periodic blood sugar tests.

3. Preventing Osteoporosis

Most of us don't realize that our bones are living organs that are constantly changing. Every day old bone cells die and new ones are created to take their place. Prednisone increases the loss of bone and slows the formation of new bone cells. Eventually, this may result in a decrease in bone density, or osteoporosis. Osteoporosis is a common condition in adult Americans causing over 1.5 million fractures each year, including more than 300,000 hip fractures. Prednisone may cause osteoporosis even in people who are not usually at high risk such as males and young people. In people susceptible to osteoporosis, prednisone may accelerate the process of bone loss and increases the risk of fracture of the spine or hip. Other risk factors include:

- Female sex
- Caucasian or Asian heritage
- Small, thin frame
- Lack of regular weight-bearing exercise
- Poor calcium intake in diet
- Family history of osteoporosis
- Early menopause or removal of ovaries
- Low testosterone levels in men
- Tobacco use or heavy alcohol use
- Overactive thyroid Thyroid hormone pills
- Diabetes
- Prior ulcer surgery
- Crohn's disease
- Eating disorders like anorexia

If you are on long term prednisone, you must aggressively counteract your increased risk as noted below.

Eat calcium rich foods

Increasing the amount of calcium in your diet can lessen the risk of osteoporosis. Your goal should be 1500 mg per day. Low fat dairy products (skim milk, low fat yogurt, fat free cottage cheese) are a good source of calcium. Many new products are even fortified with extra calcium. Certain vegetables are a good source of calcium including kale, turnips, collard greens, and broccoli. Another simple way to add extra calcium is by taking Tums tablets that contain calcium carbonate. Take two tablets during a meal twice a day.

Take vitamin D

Just eating more calcium is not enough. Vitamin D is required to help calcium be absorbed into your system and strengthen your bones. Vitamin D is obtained by exposure of your skin to sunshine, vitamin D fortified foods, and taking a vitamin supplement. We suggest about 800 mg per day - more can be harmful. One way to add calcium and vitamin D is a combination such as Citracal caplets + D which can be purchased without a prescription in the vitamin section of your local pharmacy. Take two tablets twice daily with food. This will provide an extra 1260 mg. of calcium and plenty of vitamin D each day. It is also recommended that you take a multivitamin supplement daily.

Exercise

Prednisone can also cause muscle weakness and atrophy. A low impact daily exercise program will help burn up more calories, improve your sense of well-being, and help prevent muscle and bone loss. Exercise can also help prevent the weight gain that often occurs during prednisone therapy. This exercise program should include both aerobic exercises which burn calories and improve cardiovascular fitness as well as moderate weight-training which strengthens muscles and slows bone loss. It doesn't have to be complicated and you don't have to join a gym. For bone and muscle strength, weight-bearing exercises are especially important. A simple walking program is a good way to start. Start slowly and do the best you can. You don't have to be jock. If you are too fatigued one day, just try harder next time. The important thing is to have a program of regular exercise.

Estrogen replacement

Estrogen, a female sex-hormone, protects and strengthens bones. After menopause, estrogen levels drop and women become more susceptible to osteoporosis. Adding prednisone to the picture more than doubles the risk. The good news is that taking a low dose estrogen supplement helps prevent this problem. If you are a post-menopausal woman and on prednisone, ask your gynecologist if you would be a candidate for hormonal replacement therapy.

Medications to strengthen bones

In addition to diet, vitamins, exercise, and estrogen, two new drugs show great promise in prevention of osteoporosis. Miacalcin (calcitonin) is given as a nasal spray once a day and reduces bone loss. Fosamax (alendronate) is another new drug that has been shown to actually strengthen weak bones. It is given as a tablet, but may cause ulcers of the esophagus in some patients. Be sure you know how to take it correctly before

starting treatment. Much research is being done and other new drugs are on the way.

Measuring bone density

A simple painless x-ray is called a bone densitometry test can tell your doctor if your bone density is normal or below normal. In general, the lower your bone density, the higher your risk for fracture. Since osteoporosis has no early warning symptoms, beginning its first visible sign may be a debilitating. Now we can better estimate who is at risk. If you are on long-term prednisone therapy, ask your doctor about bone densitometry.

4. Avascular necrosis

Fortunately, this side effect of high dose prednisone is not common. For reasons that are not known, some patients develop a rare form of damage to the hip joint called avascular necrosis (or osteonecrosis, meaning "bone death"). This syndrome causes pain with weight-bearing and some loss of joint function. Many patients with avascular necrosis require joint replacements.

5. Skin problems

Prednisone may cause acne of the face, chest, and back - "steroid acne." This is especially a problem in teenagers, but can occur at any age. In most cases, keeping the skin as clean as possible and using topical antiacne medications will control the problem. If simple measures don't help, a consultation with a dermatologist may be needed. Patients on prednisone also often notice that they bruise easily, even with only slight trauma. Other skin problems include slow wound healing, redness of the face (plethora), stretch marks, night sweats, and increased facial hair. People on prednisone should keep their skin clean and protected and avoid skin trauma including sunburn.

6. Digestive upset

Prednisone is helpful to those with inflammatory disorders of the colon and small intestine such as colitis and Crohn's disease; but high doses may cause irritation of the upper digestive system. When inflammation occurs in the stomach lining, it is called gastritis. If severe, a peptic ulcer may develop. This is especially true if the patient is a past history of ulcers or regularly takes other anti-inflammatory drugs such as aspirin or prescription medications for arthritis.

In mild cases, simple over-the-counter antacids may be helpful; but all antacids - including Tums - can decrease the absorption of prednisone - so antacids shouldn't be taken within an hour of prednisone. If persistent symptoms of nausea or heartburn develop while on prednisone, your doctor can prescribe stronger medications that easily controls stomach inflammation.

7. Mood swings

People on prednisone commonly experience changes in mood, particularly when they are taking high doses. One day, they may feel euphoric for no apparent reason. Many have difficulty sleeping at night. At other times, there may be unexplained feelings of anxiety or a lack of concentration. It is common to feel tired and blue for a few days each time the dose of prednisone is being tapered downward. In most

patients, these effects are mild, but can be very disturbing - both for the patient and their family.

Be prepared

If you experience mental changes during prednisone therapy, be reassured that you are not crazy and that these changes will subside as the medication is withdrawn. It is important to anticipate this problem and to discuss it with your friends and family. Let them know that you may experience mood swings, short temper, and irritability and it's not their fault. Try to minimize the stresses in your life. If you can't cope, discuss it with your doctor. He may have to adjust your dosage or suggest stress reduction counseling. In some cases, it may be necessary to take medications for anxiety or antidepressants for a short while. If insomnia is a problem, try taking a short nap in the afternoon.

8. Eye changes

High dose or long-term use of prednisone can cause two types of eye problems - cataracts and glaucoma. Cataracts are deposits in the lens of the eye and are part of the normal aging process. They are more common after long term prednisone usage and there is nothing you can do to prevent them. Fortunately, the cataracts caused by prednisone are usually small and usually not the type that interfere with normal vision. Prednisone can also increase the pressure of the fluid inside the eyeball, a painless condition known as glaucoma. If eyeball pressure rises high enough, vision may be permanently damaged. Blindness can result. However, once diagnosed, glaucoma can be treated with prescription eyedrops. Patients on prednisone should see their eye doctor at least once a year for a complete eye examination.

9. Immune system

One of the actions of prednisone is to weaken the body's immune system. This effect is beneficial when treating allergies or so-called "autoimmune" diseases like arthritis, lupus, ulcerative colitis and Crohn's disease. However, whenever you weaken the immune system, you increase the body's susceptibility to infection. Prednisone does not make an individual more likely to get a flu or catch a cold. But, it can increase susceptibility to chickenpox (varicella) and other herpes viruses. Individuals, who have recovered from tuberculosis, or TB, can experience reactivation of the disease when on prednisone. If you have not previously had chickenpox, tell your doctor. Do not take prednisone if you have tuberculosis (active or inactive), shingles or other herpes infection of eyes, lips, or genitals. You should not be vaccinated against any infectious disease while you are on prednisone especially live polio vaccine. Allergy skin tests and TB skin tests will usually be invalid while you are on prednisone. A small number of patients on prednisone develop yeast infections of the mouth (thrush) or vagina. Fortunately, effective medications are available to combat this problem should it occur.

Withdrawal

Prednisone is one of the most powerful medicines prescribed and has many beneficial actions, but as noted above there can be many potential problems. Side effects are usually dose-dependent. This means the more prednisone you take over a

longer period of time, the greater the risk of side effects. Therefore, once your condition comes under control, your doctor will usually suggest that the dose be gradually reduced. The goal is to get off the medication entirely although this is not possible in every case.

Just as taking prednisone can cause side effects, reducing the dose may cause problems as well. Prednisone is not addicting like a narcotic, but many patients experience withdrawal symptoms as the dose is reduced. These often include muscle soreness, joint pain, fatigue, and depression. Know that these effects are also temporary and worth bearing to allow a cutback in your dose. If you experience any unusual symptoms as your prednisone dose is reduced, contact your doctor. It may be necessary to temporarily increase your steroid dose until you are feeling better and then taper the dose more slowly.

Precautions

Notify your doctor if you suffer from severe depression, diabetes, or high blood pressure. Be sure to inform him if you are taking diuretics (water pills), digoxin, Coumadin, phenobarbital, or medications for arthritis. Let your doctor know if you may be pregnant or plan to become pregnant in the near future. Low dose prednisone can be used in pregnancy if necessary. However, it is best to avoid all potent prescription drugs during pregnancy whenever possible.

Remember

Prednisone is a type of steroid medication that resembles cortisone, a hormone naturally produced by the body. It is a powerful drug with many helpful properties and, when used properly, prednisone saves lives. But as with all medications, side effects may occur. Before prescribing prednisone, your doctor considers alternatives and carefully weighs the benefits against the risks. You can best limit problems with this medication by taking it exactly as prescribed and seeing your doctor for regular follow-up visits. If you have any questions or concerns, please discuss them with your doctor.

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DRINK THIS AT NIGHT. BE ALERT IN MORNING

Wouldn't it be great to wake up clearheaded and alert? You're not dreaming! Researchers from the University of Maastricht in the Netherlands have found that drinking a special evening milkshake spiked with the amino acid tryptophan--it's what is in the Thanksgiving turkey that makes you sleepy--may clear the morning fog of those who don't get enough shuteye the night before, reports Reuters.

So far, this is just preliminary research, but the study of 28 healthy, young adults found that when they drank a milkshake that contained a protein powder called alpha-lactalbumin, those who had sleep problems were much more alert in the morning. People who slept well anyway showed no added benefit from the milkshake.

Alpha-lactalbumin, which is derived from whey, is packed with tryptophan, a substance that appears to sharpen mental acuity by improving sleep. Found in beef, chicken, turkey, and dairy products, tryptophan is a precursor for the

brain chemical serotonin, which is thought to help regulate sleep.

The study: Twenty-eight men and women participated in two experiments on separate evenings. Half the group had mild sleep problems, while the other half had no sleep complaints. In one experiment, all 28 participants consumed the tryptophan-fortified milkshake with dinner and later for a snack; in the second experiment, they drank a placebo milkshake that contained no alpha-lactalbumin. After waking up the next morning, all the volunteers took a computerized test to measure mental reaction times.

The results: Drinking the supplemented milkshakes doubled the tryptophan blood level of the participants, compared with the placebo shakes. Those who had sleep problems performed better on the mental alertness test after having the tryptophan milkshakes, but it made no difference to those who didn't have sleep difficulties. Why? Improved sleep from the tryptophan probably explains the better test results, something the good sleepers didn't need.

If you really want to try this, you can get the powder for a tryptophan-laced milkshake in a product called BioPure that is supplied by Davisco Foods International of Eden Prairie, Minn. Still, note this: Lead study author Dr. C. Rob Markus told Reuters that more research is needed before this can be recommended as a sleep aid. The study findings were published in the American Journal of Clinical Nutrition.



LIFESTYLE CHANGES

NUTRITION

After food is consumed it is converted to energy and carbon dioxide (CO₂). Oxygen is the main catalyst for converting food to energy which then enables the body to remove CO₂ (a waste product) from the body by exhaling. COPD restricts oxygen from getting into the body and therefore makes it difficult for the body to remove excess CO₂.

In order for your body to have enough energy to expel CO₂ and perform other bodily functions, it is important to eat foods that create energy.

This means:

- Having good mix of carbohydrates, protein and fat in your diet
- Eat food high in fiber like vegetables, cooked dried peas and beans (legumes), whole-grain foods, bran, cereals, pasta, rice and fresh fruit to help your digestive system to work more efficiently (20 to 35 grams of fiber each day is recommended)
- Drink 6-8 ounces of non-carbonated, caffeine free beverages a day; consuming these types of fluid helps to thin out mucus
- Limit salt intake so your body doesn't retain fluid; fluid retention can make breathing difficult
- Limit your intake of caffeine; caffeine can interfere with some COPD medications

SELF-HELP TIPS

Because COPD can be disabling, the American Lung Association has come up with some helpful hints to get people through their days a bit easier.

- Try to spread your daily activities out over the course of your day; include periods of rest between activities;
- Consider using a bath chair when bathing or showering; place mirrors, shaving tools, soaps and shampoos in easy to reach places.
- Avoid applying heavy perfumes and colognes, as they may trigger an allergic type reaction making breathing difficult; avoid aerosol sprays.
- Lay your clothes out the night before so you are not frantically searching for them the next day; get dressed while seated on a chair or on the bed; use slip on type shoes or make sure you have a shoe horn for tight fitting shoes; wear loose fitting clothes so you don't feel confined; avoid tight necked shirts and blouses; dress in layers so you can easily adjust to changes in climate.

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TRY THIS SUPER LOW FAT RECIPE. IT IS DELICIOUS!!!

SNICKERS BAR DESSERT.

- 1 - 2L container of low fat vanilla ice cream
- 1 container of low fat Cool Whip topping
- 1/3 cup chunky Peanut Butter (regular)
- 1 pkg low fat Chocolate pudding powder

Soften ice cream and cool whip. Mix all together in large bowl (Wait long enough for the ice cream to soften)

Spread out in a 9x13 inch pan ...put in freezer for at least 6 hours or overnight.

Makes 12 servings at 2 points each



**HAPPY
BIRTHDAY
USA!**



"I have metal fillings in my teeth. My refrigerator magnets keep pulling me into the kitchen. That's why I can't lose weight!"

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