

# EFFORTS

*Emphysema Foundation For Our Right To Survive*



Emphysema Takes Your Breath Away

Autumn 2009

## **HEAT STRESS IN OLDER PEOPLE AND PEOPLE WITH CHRONIC DISEASES**

People over the age of 60 are the most vulnerable to heat waves, with 82% to 92% more deaths than average occurring in this age group. Risks for heat-related illness or injury – such as heat stroke, heat exhaustion and heat cramps – are also heightened in people with obesity, heart disease, diabetes and respiratory conditions as these decrease the body's ability to adapt to temperature changes. A review in CMAJ (Canadian Medical Association Journal) describes the effect of heat on human physiology and factors that increase the risk of heat stress.

Physicians – and their patients – must be aware of the risk factors for older people and people with chronic disease in excessive heat conditions and counsel and manage accordingly.

Laboratory-based physiologic studies show that the ability to detect heat is reduced, and the physiological response to heat with adequate blood distribution and sweating to cool the body is slower, in otherwise healthy older individuals compared to younger people. Their ability to respond to thirst is also delayed and they take longer to recover from dehydration.

People of lower socio-economic groups, lower levels of education and those who are socially isolated have a greater risk of mortality. Air conditioning is associated with a risk reduction of 80% and working fans with a 30% reduction. Housing may be a factor as lower income people often live in crowded or poor-quality housing, with inadequate ventilation and cooling systems. Homeless people are at risk because of lack of shelter from extreme heat and often also by underlying physical or psychiatric issues.

However, there are gaps in knowledge that can serve as further areas for research. "It will be essential to discern whether impairment in thermoregulatory capacity exists in terms of the whole-body response and not simply in terms of local heat-loss responses (sweating and/or skin blood flow)," write Dr. Glen Kenny from the Faculty of Health Sciences at the University of Ottawa and coauthors. "New research should focus not only on filling these gaps in the science-based information but also on developing clinical guidelines for health professionals to facilitate the giving of advice to patients."

<http://tinyurl.com/129lly>



## **CAN SOY PROTECT THE LUNGS?**

Chronic obstructive pulmonary disease -- commonly known as COPD -- is most often caused by a lifetime of smoking. But could what a person eats make a difference?

Yes, report Australian researchers who surveyed 300 Japanese COPD patients about their diets, comparing them with 340 similar people without COPD. They found people who ate more soy were less likely to have the lung condition.

"It has been suggested that flavonoids from soy foods act as an anti-inflammatory agent in the lung, and can protect against tobacco carcinogens for smokers," study author Dr. Fumi Hirayama was quoted as saying. He is quick to note, however, more study will be needed to understand exactly how soy may be affecting the risk for chronic lung disease.

Smokers should also know quitting is still the best way to prevent or minimize the effects of COPD.

A staple in the Japanese diet, soy has been associated with lowering cholesterol levels and easing the symptoms of menopause. This is the first study to suggest beneficial effects on the respiratory system as well. <http://tinyurl.com/qafvdv>



## **CURED MEATS BAD FOR COPD PATIENTS?**

I am not sure where I read of cured meats also being bad for COPD. Which I tend to believe is true. As after I eat lunch meat or hotdog, the following day my breathing is worse. I tried this several times and the same thing happened. Anybody else experience this?

Pam (PA)

(A) Yes you are quite right, Pam. See link below. Ann (UK)

April 16, 2007 In adults 45 years and older, frequent consumption of cured meats was associated with decreased lung function and increased risk for chronic obstructive pulmonary disease (COPD), according to the results of a cross-sectional study reported in the April 15 issue of the American Journal of Respiratory and Critical Care Medicine.

"Cured meats are high in nitrites," write Rui Jiang, MD, PhD, from Columbia University in New York, and colleagues. "Nitrites generate reactive nitrogen species that may cause nitritative and nitrosative damage to the lung resulting in emphysema."

This cross-sectional study evaluated 7352 participants in the Third National Health and Nutrition Examination Survey (NHANES III), aged 45 years or older, who underwent spirometry and had adequate measures of cured meat, fish, fruit, and vegetable intake. <http://tinyurl.com/qnd5k7>



## **LIVING WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE:**

*A survey of patients' knowledge and attitudes*-Summary  
Summary

## Introduction

Chronic obstructive pulmonary disease (COPD) is a common respiratory condition and the fourth leading cause of death in Canada. However, little is known about the impact of COPD on the lives and attitudes of individuals living with this condition. The purpose of this study was to determine whether Canadians with COPD are properly educated and supported, and to recommend solutions to any care gaps identified.

## Methods

A total of 389 Canadians were surveyed who were 40 years of age and older, physician diagnosed with COPD, and current or former smokers. The telephone survey contained 68 items and took 35 min to complete. COPD severity was classified according to symptom severity using the Medical Research Council (MRC) score.

## Results

Respondents tended to overestimate their disease severity and reported substantial symptom burden and psychosocial impact of living with COPD. Most individuals claimed to be well informed about COPD; however, their knowledge was poor in several domains including the causes of COPD, the consequences of inadequate therapy and the management of exacerbations. Family physicians were the main health care providers. A minority of respondents had seen a lung health educator. Only 34% had ever received a written action plan and only 33% had been told how to prevent an exacerbation.

## Conclusions

The symptom burden and psychosocial impact of living with COPD is substantial. There are significant gaps in patients' knowledge about the management of COPD and little contact with lung health educators. Increased use of COPD-specific, self-management education programs may help rectify these care gaps.

<http://tinyurl.com/lvyz2t>



## COPD IS THE LEADING CAUSE OF LUNG DISEASE IN THE NATION

The leading cause of lung disease is called chronic obstructive pulmonary disease (COPD). In the United States, it is estimated that approximately 26 million adults have COPD. The diseases that make up COPD include asthma, chronic bronchitis and emphysema.

Studies have shown that COPD has killed more than 120,000 people in the U.S. annually. The cost for caring for patients with COPD exceeds \$37 billion dollars annually.

The leading cause of COPD is exposure to tobacco smoke. In fact, more than 80 percent of deaths from COPD are directly attributable to smoking or being around a smoker. Studies have shown that if you smoke, you have a 25 percent risk of developing COPD and 13 times the risk of dying from it. Unfortunately, secondhand smoke exposure can be problematic to anyone, as well.

Other risk factors for COPD are age, recurrent childhood respiratory infections, family history of COPD, environmental exposure, occupational pollutants and a lung chemical deficiency (alpha-1 antitrypsin deficiency).

The second leading cause of COPD is occupational exposure. People known to be around mineral dust, such as cold

mining, hard rock mining, tunnel work, concrete manufacturing, silica (sand) exposure, organic dust. grains, flax, cotton and hemp are susceptible to COPD.

Other COPD causes include noxious gases, welding fumes, heavy metal exposure, sulfa dioxide, cadmium, various cyanides and flavoring of different types.

Anyone who thinks they are suffering from COPD, should see a doctor for complete evaluation. Anyone who smokes should stop, and anyone exposed to secondhand smoke should try to avoid it.

<http://tinyurl.com/nnrsexp>



## SEVERE COPD MAY LEAD TO COGNITIVE IMPAIRMENT

Severe chronic obstructive pulmonary disease (COPD) is associated with lower cognitive function in older adults, according to research from Mount Sinai School of Medicine. Researchers compared cognitive performance in over 4,150 adults with and without COPD and found that individuals with severe COPD had significantly lower cognitive function than those without, even after controlling for confounding factors such as comorbidities.

"Our findings should raise awareness that adults with severe COPD are at greater risk for developing cognitive impairment, which may make managing their COPD more challenging, and will likely further worsen their general health and quality of life," wrote lead author of the study, William W. Hung, M.D., M.P.H., assistant professor at Mount Sinai School of Medicine.

Patients with COPD may experience periods of hypoxia—low oxygen levels—that might lead to brain abnormalities that could reduce cognitive capacity. Alternatively, hypoxia may cause or exacerbate diseases that are characterized by cognitive impairment, such as Alzheimer's disease. Although past studies have observed a higher rate of cognitive impairment among adults with COPD, the relationship has not been formally tested longitudinally in large populations until now.

"We wanted to determine whether the observed relationship between COPD and cognitive impairment was, in fact, something we could document over time, and if so, we wanted to determine whether the degree to which it occurred was significant," said Dr. Hung.

To do so, Dr. Hung and colleagues obtained data from the Health and Retirement Study, a national prospective biennial survey of Americans 50 and older. They included data from survey takers who had undergone cognitive testing in 1996 and again in 1998, 2000 or 2002.

Of the 4,150 individuals ultimately included, 492 had COPD, and of those, about one-third (153) had severe disease. Using a 35-point cognition scale, the researchers found that scores among all patients with COPD declined on average by one point over the six-year period between 1996 and 2002.

After further classifying those with COPD as having severe or nonsevere disease, the researchers found that severity and cognitive decline were linked. Even after controlling for sociodemographic characteristics and other confounding factors, the mean cognition scores for those with severe COPD

were significantly lower (0.9 points;  $p=0.01$ ) than those without COPD.

"These objective measures of cognition used in survey research do correlate with functional impairment," said Dr. Hung. In particular, executive functions that require greater cognitive ability, such as handling money and medications, are more poorly performed at greater levels of cognitive impairment. Extrapolating from past research using the same cognitive test, Dr. Hung and colleagues suggest that their findings would likely be associated with a 22 percent increase in the mean number of difficulties the severe COPD population would experience with daily tasks.

"While this number may not appear to be of major concern on the individual level, on a population level, it is roughly equivalent to nearly a quarter of severe COPD patients experiencing difficulty with a basic life skill," said Dr. Hung. "In this regard, these findings have serious implications. Often patients with cognitive difficulties, if undetected and untreated, have lower adherence to their treatment and follow-up regimens, and as a consequence may deteriorate more rapidly and have worse health outcomes."

In conclusion, Dr. Hung suggested that physicians and other clinical staff managing the care of these patients should be aware of their increased risk for cognitive decline and the greater needs and challenges associated with caring for cognitively impaired older adults.

<http://tinyurl.com/l2yb19>.



## THE BEST TREATMENT MIGHT BE WRONG FOR YOU *Guidelines sought to help determine most effective medical care*

You hear the pitch in drug ads all the time: "Ask your doctor if this medication is right for you." Trouble is, in many cases the only way your doctor can answer the question is by having you try the drug. And, as the latest research reveals, what's "right" for the smiling folks in a TV commercial may be just plain wrong for you.

**One reason:** Each of us responds uniquely to any given medication. "Your liver and kidney function, overall health, treatment for other conditions, and genetics all play a role in how a drug affects you," says Martha Gerrity, MD, PhD, clinical evidence specialist at the Center for Evidence-Based Policy at Oregon Health & Sciences University.

**Another reason:** The chances of your having a good response are simply not in your favor. "To market a medication, all you have to do is prove that it's better, on average, than a sugar pill," says Mark Gibson, deputy director of the OHSU center. A drug that works 20 percent of the time, for instance, may be considered effective — even though it does nothing for 80 percent of patients.

Those odds could improve soon, thanks to a national push to comb through studies and scientific reviews to determine who gets better most often on which drugs. Called comparative effectiveness research, the initiative aims to produce a reliable set of guidelines that will enable you and your doctor to choose treatments based on solid evidence, not guesswork. The Obama administration has made comparative effectiveness research a

priority, funneling over \$1 billion — "a huge increase," says Gibson — into the program as part of the government's stimulus package.

Already, 28 research centers funded by the government's Agency for Health care Research and Quality (AHRQ) have produced a wealth of findings on treatments for many common, chronic conditions. If you suffer from one of them, first start with lifestyle changes such as exercise and a modified diet. Then, when you're ready to try drug treatment, talk to your doctor about the steps outlined here — all supported by powerful new research.

### HIGH BLOOD PRESSURE

If you're overweight, you can lower your blood pressure by losing just 5 pounds. And healthy strategies for dropping those pounds — exercising; consuming less saturated fat; and eating more fruits, vegetables, and whole grains — can each help tame hypertension. But you may still need medical treatment, depending in part on how high your blood pressure is.

First, try... a diuretic, which takes pressure off blood vessels by making the body eliminate water and sodium. "Many people with hypertension who take a diuretic alone are able to bring blood pressure down to a target of 130/90 or, ideally, 120/80, with relatively few side effects," says Gerrity.

If that doesn't work... take a two-pronged approach by adding a beta-blocker, ACE inhibitor, or angiotensin II receptor blocker (ARB), all of which work in a manner different from that of your diuretic.

### TAILOR YOUR TREATMENT

If you have diabetes or kidney problems: Make your second drug an ACE inhibitor, which protects the kidneys.

If you're African American: Consider starting with a combination treatment that includes a diuretic: African Americans generally don't respond as well to treatment with just one drug.

If blood pressure is really high: Start right away with combo treatment to quickly bring down systolic blood pressure if it's 160 or higher, or diastolic blood pressure if it's 100 or higher.

If you have ischemic heart disease (which can cause your pulse to be irregular or rapid): Instead of a diuretic, start with a beta-blocker, which can help lower your heart rate.

If you're pregnant: Avoid ACE inhibitors and ARBs; they can cause birth defects. Better choices: beta-blockers and vasodilators that relax blood vessels.

Go natural: Omega-3 fatty acids lower blood pressure, but only in high doses (above 3 g a day) that may increase your risk of bleeding, so take them only under a doctor's supervision. Coenzyme Q10 may also cause small drops in blood pressure and may lower blood sugar in some people, so be cautious if you're taking diabetes medication.

### TYPE 2 DIABETES

Diet, exercise, and weight control are among the most potent tools for bringing down high blood sugar. A 10-pound weight loss — even in someone who is obese — can help patients with diabetes as much as adding another medication,

says Gerrity. A variety of drugs also effectively control blood sugar.

First, try... Metformin (Glucophage), which decreases the amounts of glucose absorbed from food and made by the liver. Metformin is older and cheaper than many other drugs, but it matches or outperforms the newer thiazolidinediones (Actos, Avandia), according to a new review.

If that doesn't work... combine metformin with a second drug, such as a sulfonylurea, which increases the body's insulin production. "Because metformin and sulfonylureas work in different ways, the drugs lower blood sugar together better than either drug would by itself," says Gerrity.

#### **TAILOR YOUR TREATMENT**

If you're overweight: Stick to metformin; it won't make you gain weight.

If you have high cholesterol: Avoid Avandia and Actos, which can raise "bad" LDL cholesterol and worsen congestive heart failure, according to AHRQ reports. Opt for metformin, which can lower LDL.

If you have a sensitive stomach: Take a smaller dose of metformin, which is more likely than other diabetes pills to cause diarrhea and stomach cramps. If the lower dose proves less effective, combine metformin with a different drug to keep blood sugar under control.

Go natural: "Eat high-fiber, unprocessed foods, especially legumes," advises Kevin Barrows, MD, interim director of clinical programs at the Osher Center for Integrative Medicine at the University of California, San Francisco. Some reports suggest you can also lower blood sugar by taking the botanicals *Gymnema sylvestre* and bitter melon (but don't combine them with prescription meds).

#### **DEPRESSION**

Exercise can brighten your blues by reducing stress, releasing muscle tension, building self-esteem, helping you sleep, and boosting levels of feel-good brain chemicals. But you may need treatment to help get you going if you're feeling listless. Six out of 10 people feel better on the first antidepressant they try; the rest need to try other drugs, according to the AHRQ. Ask your doctor about the cytochrome P450 genotyping test, a genetic analysis that can help you predict which drugs will work best for you and whether you're more likely to experience side effects.

First, try... a selective serotonin reuptake inhibitor (SSRI), such as fluoxetine (Prozac, Sarafem), paroxetine (Paxil), or sertraline (Zoloft). Most people feel these drugs help, and research finds that they have fewer side effects than other antidepressants.

If that doesn't work... Tricyclic antidepressants work as well as SSRIs do, although side effects are usually more numerous and severe.

#### **TAILOR YOUR TREATMENT**

If you're overweight: Avoid paroxetine and mirtazapine (Remeron), which are more likely to cause weight gain than drugs like fluoxetine and sertraline, according to a government report. Consider bupropion (Wellbutrin), which tends to shave off 2 or 3 pounds.

If you have sexual problems: Bupropion is less likely to cause loss of desire or trouble reaching orgasm than fluoxetine, sertraline, and especially paroxetine.

If you also take drugs for diabetes or high blood pressure: Watch glucose and BP levels more closely. Both sulfonylureas and beta-blockers use the same chemical pathways in the liver as antidepressants, so starting an SSRI may increase or decrease the potency of these medications, says Gerrity.

Go natural: Supplements of SAM-e, a naturally occurring building block of brain chemicals (such as serotonin) that help stabilize mood, were found to significantly boost patients' spirits in an AHRQ review of 28 studies.

#### **JOINT PAIN**

Staying active should be a lifelong strategy: Walking and other moderate exercise can reduce pain, keep you flexible, and strengthen muscles supporting your joints. However, many joint pain sufferers find they need more help.

First, try... Methotrexate for rheumatoid arthritis. Called a DMARD (disease-modifying antirheumatic drug), it suppresses the immune system attacks that characterize the disease, tamping down the inflammation that causes joint damage and pain. It also comes in a pill that can be as effective as similar drugs delivered in shots or IV treatments, according to a new government guide. If your pain is caused by osteoarthritis, start with acetaminophen (Tylenol), the OTC painkiller least likely to cause side effects.

If that doesn't work... A combo of methotrexate and a DMARD injection usually works better than methotrexate pills alone for people with more aggressive and drug-resistant rheumatoid arthritis. Don't double up with another oral DMARD — the research shows that pills generally aren't more effective together than they are alone. For osteoarthritis, try naproxen (Aleve, Naprosyn), an NSAID that doesn't increase your chances of a heart attack like celecoxib (Celebrex) and diclofenac (Voltaren) do.

#### **TAILOR YOUR TREATMENT**

If you're at risk of heart disease: Avoid ibuprofen (Advil, Motrin): It poses cardiovascular risks for more people than other anti-inflammatories do, reports the American College of Rheumatology.

If you're over age 45: Try to use anti-inflammatories sparingly. At least 3 times as many people in this age group experience serious stomach bleeding, compared with younger adults taking these drugs.

If you're premenopausal: Use two forms of birth control (such as the Pill plus a condom) while taking methotrexate, which can cause serious birth defects.

Go natural: Try fish oil supplements containing omega-3 fatty acids for rheumatoid arthritis: "Fish oil appears to be a potent anti-inflammatory," says Barrows. He recommends 3 g of omega-3s daily, possibly increasing to 6 g if needed, so check the appropriate amount with your doctor. For osteoarthritis, glucosamine hydrochloride with chondroitin sulfate may ease moderate to severe pain with few possible side effects, says the AHRQ. "Although some recent research concluded chondroitin doesn't help, far more studies have shown that it does," says Barrows.

**POOR SLEEP**

Non-drug solutions can work as well as or better than medication for insomnia, although they may take 1 to 3 weeks to become effective. One recent review of 37 studies found that mental techniques such as trying to stay awake instead of trying to fall asleep — a reverse psychology technique known as paradoxical intention — consistently helped insomniacs nod off. But resistant sleep problems often need to be addressed with drugs.

First, try... Zolpidem (Ambien): "It's effective in 75 to 80 percent of people who try it and is generally safe," says James Walsh, PhD, executive director and senior scientist at the Sleep Medicine and Research Center at St. Luke's Hospital in Chesterfield, MO.

If that doesn't work... Try a longer-acting sleep medication, such as eszopiclone (Lunesta) or Ambien CR, both of which are active in the body for approximately 8 hours.

**TAILOR YOUR TREATMENT**

If you have trouble falling asleep: You'll nod off faster after taking Sonata than you will if you take Ambien, according to a review by the Oregon Evidence-Based Practice Center.

If you wake during the night: Ambien, Lunesta, and other sleep medications tend to provide longer sleep duration than Sonata and keep people asleep once slumber overtakes them.

Go natural: "Cognitive behavioral therapy can work as well as drugs, and its effects last up to 6 months after you stop treatment," says Walsh. In CBT, you redirect your mind away from anxiety-producing thoughts and start spending less time in bed, not more. That makes you more tired the next time you hit the sack, so sleep comes easier. "Once you're sleeping better, you can start sleeping longer," says Walsh. Go to [nacbt.org](http://nacbt.org) to search for a therapist.

**MIGRAINES**

Keeping a headache diary is one of the best ways to identify your triggers and possibly prevent future attacks. It also helps your doctor find a prevention and treatment plan that works for you. Record possible food triggers, emotional stress, alcohol consumption, medication, hormonal changes, and sleep patterns. Still, the throbbing onslaught of headache pain can be difficult to predict, so a variety of drugs have been developed specifically to treat migraines — and some designed for other conditions may help as well.

First, try... an OTC or prescription NSAID such as ibuprofen, or a combo drug such as Excedrin Migraine, which contains acetaminophen, aspirin, and caffeine. These drugs will often relieve mild to moderate migraine pain but may not help a severe attack, according to guidelines from the American Academy of Neurology. "Take an NSAID as soon as you feel a migraine coming on," says Gerrity. "It's more effective at the beginning of the headache."

If that doesn't work... Try a triptan, such as sumatriptan (Imitrex) or rizatriptan (Maxalt), which can relieve pain, nausea, and sensitivity to light but has relatively few side effects. Research shows that sumatriptan works especially well when taken with naproxen (an NSAID). And a review from OHSU's Evidence-Based Practice Center found rizatriptan especially

effective at providing 2-hour relief, compared with sumatriptan and naratriptan.

**TAILOR YOUR TREATMENT**

If you're treating high blood pressure: Consider using beta-blockers, which can make migraines milder and less frequent. If that doesn't help, try a calcium channel blocker, such as verapamil (Calan, Isoptin), another type of high blood pressure medication that may also relieve migraines.

If migraines strike more than twice a month: Try a medication shown to prevent migraines, such as a tricyclic antidepressant or an antiseizure drug like topiramate (Topamax).

Go natural: There's good evidence that butterbur is an effective supplement in treating migraine pain. And magnesium supplements may make migraines less frequent by correcting deficiencies that seem to be more common in migraine sufferers. "Feverfew and riboflavin may also help," says Barrows. Combination products like MigreLief put magnesium, feverfew, and riboflavin in a single pill.

<http://tinyurl.com/nd7hfg>

**NEW GENES AT WORK IN PATIENTS WITH HEREDITARY LUNG DISEASE*****Gene therapy trial succeeds in spurring production of a protective protein***

Researchers at the University of Massachusetts Medical School and the University of Florida in Gainesville have safely given new, functional genes to patients with a hereditary defect that can lead to fatal lung and liver diseases, according to clinical trial findings slated to appear this week in the online early edition of the Proceedings of the National Academy of Science.

"This trial represents a very important step toward a potential gene therapy for the 100,000 or more Americans who suffer with alpha-1 antitrypsin deficiency," said Terence R. Flotte, MD, dean of the School of Medicine and provost & executive deputy chancellor of UMass Medical School. Dr. Flotte, senior author on the study, was formerly the chair of pediatrics at the University of Florida, where the study was conducted.

Patients with alpha-1 antitrypsin deficiency cannot produce a protective form of the protein alpha-1 antitrypsin, which is normally produced in the liver and protects the lungs from inflammation. Those lacking alpha-1 antitrypsin are vulnerable to infections or irritants in the air, such as cigarette smoke, and often develop life-threatening lung disease. Some people with the deficiency lead disease-free lives, never knowing they have defective genes. In others, the deficiency can lead to emphysema and cirrhosis, both progressive diseases that can be fatal.

In the clinical trial, three patients who received injections of a harmless virus containing copies of a correct gene for alpha-1 protein in their upper arms were able to produce trace amounts of alpha-1 antitrypsin for up to one year. Although the levels produced were not considered therapeutic, the study provided critical "proof of principle" that a corrected,

functioning gene could trigger production of the protein. The National Heart, Lung and Blood Institute recently awarded a five-year, \$2 million grant to Dr. Flotte for further clinical trials studying the use of an adeno-associated virus to deliver the alpha-1 antitrypsin gene.

"When you deliver this therapy into the deltoid muscles of the arm, the muscle becomes a factory for making the protein that these individuals are missing," said Mark L. Brantly, MD, a professor of medicine and molecular genetics and microbiology at UF's College of Medicine and first author of the study.

The trial established the safety of the adeno-associated virus used to "infect" patients' cells with replacement genes, which then do the vital work of producing the alpha-1 protein. Nine patients were divided in three groups to receive the gene therapy at the General Clinical Research Center at Shands at UF Medical Center. Patients received nine injections in their non-dominant upper arms, with the dosage increasing in each group. At 365 days after the injections, the transferred genes were measurably producing alpha-1 protein in the three patients who received the highest dose, showing that the normal gene was successfully transferred and had begun doing its intended job in the patients' muscles.

"I hope the alpha-1 community is as encouraged as I am that although this trial does not give us any guarantee, there is a fighting chance to develop a therapy using this method," said Dr. Flotte. "In patients receiving the highest dose in this study, we saw transgene expression. And although it approached just 1 percent of what we ultimately want, we can be reasonably optimistic that we can achieve much closer to normal values in people by using the same approach with an increased dose."

Although patients showed some elevated immune response to the gene therapy vector — which is designed to quickly break down after delivering its cargo — researchers did not detect any evidence that the patients' bodies rejected the transferred genes or the newly created protein.

"That's a really good sign," said Brantly, a member of the Powell Gene Therapy Center and the UF Genetics Institute, who sees about 150 alpha-1 patients in his medical practice. "After we gave the injections, the individuals stayed on the ward for five days while we monitored them. There were no ill effects, only a minimal amount of redness, and by the end of the five days most of the subjects were actually bored."

Currently, the only limitedly effective treatment for patients with serious breathing symptoms involves weekly intravenous injections of alpha-1 protein derived from human plasma. The injections must continue throughout a patient's life, according to the American Lung Association. They do not cure the disease, but they do appear to slow its progression.

"This study gives us encouraging evidence that gene therapy for alpha-1 is a realistic possibility," said John Walsh, president and chief executive officer of the nonprofit Alpha-1 Foundation, which has been supporting research of this kind for more than a decade. "The augmentation therapy available now has slowed down the progression of our lung disease and extended many of our lives. The hope of gene therapy is that we may have a one-time, brief series of injections that could allow our own bodies to produce the alpha-1 protein we need to live a normal

lifetime. The alpha-1 community is incredibly grateful for the progress that these dedicated investigators have made," Walsh said. <http://tinyurl.com/m4dyba>



## DISCOVERY MAY LEAD TO POWERFUL NEW THERAPY FOR ASTHMA

### *Human clinical trials next for compounds that block key enzyme*

University of Texas Medical Branch at Galveston researchers have found that a single enzyme is apparently critical to most allergen-provoked asthma attacks — and that activity of the enzyme, known as aldose reductase, can be significantly reduced by compounds that have already undergone clinical trials as treatments for complications of diabetes.

The discovery, made in experiments conducted with mice and in human cell cultures, opens the way to human tests of a powerful new treatment for asthma, which today afflicts more than 20 million Americans. Such a development would provide a badly needed alternative to current asthma therapy, which primarily depends on hard-to-calibrate inhaled doses of corticosteroids and bronchodilators, which have a number of side effects.

"Oral administration of aldose reductase inhibitors works effectively in experimental animals," said UTMB professor Satish Srivastava, senior author of a paper on the discovery appearing in the Aug. 6 issue of the journal PLoS One. "If these drugs work as well in humans as they do in animals you could administer them either orally or in a single puff from an inhaler and get long-lasting results."

Srivastava and his colleagues (postdoctoral fellows Umesh Yadav and Leopoldo Aguilera-Aguirre, associate professor Kota Venkata Ramana, professor Istvan Boldogh and LSU Health Sciences Center assistant professor Hamid Boulares) focused on aldose reductase inhibition as a possible asthma therapy after establishing an essential role for the enzyme in other diseases also characterized by inflammation. In disorders such as colon cancer, atherosclerosis, sepsis and uveitis, the Srivastava team has found, cells are hit by a sudden overload of reactive oxygen species (varieties of oxygen and oxygen compounds that are especially eager to react with other molecules). The result is a chain of biochemical reactions that leads the cells' genetic machinery to crank out a barrage of inflammatory signaling proteins. These summon immune system cells and generate even more reactive oxygen species, producing a vicious cycle of ever-increasing inflammation.

Aldose reductase plays an essential part in the activation of the cellular machinery that produces inflammatory proteins in these diseases, the Srivastava group discovered. "We found that if you block aldose reductase, you block the inflammation," Srivastava said. "Now, asthma, a chronic disease of inflammation is augmented by reactive oxygen species. So we thought, why not find out if aldose reductase inhibition also has an effect on asthma?"

In an initial series of in vitro experiments, the researchers applied ragweed pollen extract (ragweed pollen is notorious

for provoking the allergic reactions that lead to allergies and asthmatic airway inflammation) to cultures of human airway epithelial cells —the cells that line the network of air passages within the lungs. Some of the cultures had been pretreated with an aldose reductase inhibitor, while others had not.

The untreated cells responded in much the same way airway cells do in an asthma attack, with an increased rate of apoptosis (cell suicide), a jump in the levels of reactive oxygen species, the activation of key "transcription factors" that kick-start the production of inflammatory proteins and the large-scale generation of a whole host of molecules associated with inflammation. Cells treated with aldose reductase inhibitors, by contrast, had a much lower rate of apoptosis, reduced levels of reactive oxygen species, far smaller increases in critical transcription factors and substantially lower increases in inflammatory signaling molecules.

In collaboration with Boldogh, Srivastava next investigated whether aldose reductase inhibitors could reduce the asthma-like symptoms of mice exposed to ragweed extract, a well-established clinical model mimicking the allergic airway inflammation that commonly leads to asthma in humans. When untreated mice inhaled ragweed extract, their lungs suffered an influx of eosinophils (inflammation-inducing white blood cells), a jump in inflammatory signaling molecules, a buildup of mucin (a protein component of mucus) and an increase in airway hyper-reactivity (the tendency of air passages to suddenly constrict under stress). Mice fed a dose of aldose reductase inhibitor before inhaling ragweed extract, however, showed dramatically reduced levels of these components of the asthmatic response.

"Our hypothesis performed exactly as expected, with the experiments showing that aldose reductase is an essential enzyme in the transduction pathways that cause the transcription of the cytokines and chemokines known to act in asthma pathogenesis," Srivastava said. "They attract eosinophils and cause inflammation and mucin production in the airway."

The next step, Srivastava said, will be clinical trials to determine whether aldose reductase inhibitors can relieve asthma in humans. The researcher expressed optimism about their potential outcome of the trials, as well as gratitude to the UTMB National Institute of Environmental Health Sciences Center and the sole supporter of his asthma work, the American Asthma Foundation, which last year awarded him a three-year \$750,000 research grant.

"Really, a lot of the credit for this belongs to the AAF," Srivastava said. "Our primary interest is in cancer and the secondary complications of diabetes, but we were attracted to asthma pathogenesis because the AAF invited me to apply for a grant. I think they're going to be happy with the results."

<http://tinyurl.com/qx6t3>



## WHAT IS PARTICLE POLLUTION?

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals,

metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream. Exposure to such particles can affect both your lungs and your heart. Larger particles are of less concern, although they can irritate your eyes, nose, and throat.

Small particles of concern include "fine particles" (such as those found in smoke and haze), which are 2.5 micrometers in diameter or less; and "coarse particles" (such as those found in wind-blown dust), which have diameters between 2.5 and 10 micrometers.

### Are you at risk from particles?

People with heart or lung disease, older adults, and children are considered at greater risk from particles than other people, especially when they are physically active. Exercise and physical activity cause people to breathe faster and more deeply and to take more particles into their lungs.

People with heart or lung diseases such as coronary artery disease, congestive heart failure, and asthma or chronic obstructive pulmonary disease (COPD) are at increased risk, because particles can aggravate these diseases. People with diabetes also may be at increased risk, possibly because they are more likely to have underlying cardiovascular disease.

<http://tinyurl.com/nb3rw3>



## CARDIAC ARREST RESUSCITATION—PASSIVE OXYGEN FLOW BETTER THAN ASSISTED VENTILATION

Arizona researchers have added another piece to the mounting body of evidence that suggests during resuscitation efforts to treat patients in cardiac arrest, "passive ventilation" significantly increases survival rates, compared to the widely practiced "assisted ventilation."

### Oxygen therapy

The study, published in an online edition of *Annals of Emergency Medicine*, compared the numbers of patients who had suffered a cardiac arrest outside a hospital setting and were resuscitated in the field by Emergency Medical Services personnel. Rescuers used either bag-valve-mask ventilation, which forces air into the patient's lungs, or facemasks with a continuous flow of oxygen, which work in a similar fashion to those carried on airplanes in case the cabin pressure drops.

Among the 1,019 adult out-of-hospital cardiac arrest patients in the analysis, 459 received passive ventilation and 560 received bag-valve-mask ventilation. Neurologically normal survival after witnessed cardiac arrest with a shockable heart rhythm was higher for the passive oxygen flow method (38.2 percent) than bag-valve-mask ventilation (25.8 percent).

"These results are strikingly similar to earlier observations from Wisconsin, where survival rates went up from 15 percent to 38 percent after paramedics abandoned the official guidelines for the modified protocol that we developed," says Gordon A. Ewy, MD, a co-author of the study and director of

the Sarver Heart Center at The University of Arizona College of Medicine. The Sarver Heart Center's Resuscitation Research Group developed a modified protocol for treating out-of-hospital cardiac arrest called Cardiocerebral Resuscitation, as opposed to Cardiopulmonary Resuscitation, which should be reserved for respiratory arrest (such as near-drowning or drug overdose).

Under the new concept, first tested in Wisconsin, EMS personnel no longer intubated the patient for ventilation. Instead, they applied a facemask delivering a continuous, low-pressure flow of oxygen.

"Our findings provide compelling evidence that positive pressure ventilation is not optimal in the initial management of out-of-hospital cardiac arrest," says lead author Bentley Bobrow, MD, emergency physician at Maricopa Medical Center in Phoenix and associate professor of emergency medicine at the UA College of Medicine. "The work from our EMS providers in Arizona further questions the longstanding dogma of tracheal intubation and ventilation for cardiac arrest.

"We are most pleased that while we are helping to advance the science of resuscitation, we are saving more victims of cardiac arrest in Arizona than ever before," adds Dr. Bobrow, who also is the medical director for the Arizona Department of Health Services Bureau of Emergency Medical Services.

"This study reinforces our belief that survival of out-of-hospital cardiac arrest has more to do with circulating the blood through quality and uninterrupted chest compressions than with ventilation," Dr. Ewy adds.

<http://tinyurl.com/12uccm>



## CELLULAR CROSSTALK LINKED TO LUNG DISEASE

Crosstalk between cells lining the lung (epithelial cells) and airway smooth muscle cells is important in lung development. However, it has also been shown to contribute to several lung diseases, including asthma and pulmonary hypertension. A team of researchers, at the University of Pennsylvania, Philadelphia, has now molecularly characterized one crosstalk pathway in mice, providing potential new therapeutic targets for treating individuals with lung diseases, such as asthma and pulmonary hypertension, which are caused, at least in part, by affects on airway smooth muscle cells.

The team, led by Edward Morrisey and Ethan David Cohen, used numerous in vivo gain- and loss-of-function approaches to demonstrate that a Wnt7b/Tnc/Pdgfr crosstalk pathway was important for mouse smooth muscle development, with Wnt7b being exclusively expressed by lung epithelial cells and Pdgfr being expressed by the developing airway smooth muscle cells.

Importantly, expression of the components of this crosstalk pathway was upregulated in a mouse model of asthma and humans with pulmonary hypertension, thereby indentifying the Wnt/Tnc/Pdgfr crosstalk pathway as important in both lung development and adult lung disease. <http://tinyurl.com/n6wq39>



## ANTIBIOTICS BEING PRESCRIBED LESS FOR RESPIRATORY INFECTIONS

## *Decline seen as sign of progress against drug-resistant bacteria*

Prescribing antibiotics to treat respiratory tract infections has dropped significantly in recent years, a new study has found.

That's mainly the result of fewer young children being seen for ear infections, according to the researchers. But despite a decline overall, prescriptions for broad-spectrum antibiotics, such as azithromycin (Zithromax), and anti-microbial agents known as quinolones have increased, they reported. Such drugs are used to fight more serious infections, such as MRSA and other resistant bacteria.

"There is good news about declining antibiotic use, since inappropriate use of antibiotics can result in bacteria that are resistant to these antibiotics," said Dr. Marie R. Griffin, a professor of preventive medicine at Vanderbilt University Medical Center and a co-author of the study. "However, overuse of powerful antibiotics remains a problem."

"Antibiotics should only be used for bacterial infections, and heavy-duty antibiotics should be saved for serious infections," Griffin said.

Over the last 12 years, she said, use of antibiotics in children has declined 36 percent. "This is mainly due to educational efforts to reduce inappropriate use of antibiotics for viral infections and to a new vaccine -- pneumococcal conjugate vaccine for infants, which has reduced ear infections in children," she said.

For the study, which is published in the Aug. 19 issue of the Journal of the American Medical Association, the researchers looked at the trends in prescriptions for antibiotics from 1995 to 2006, using data from the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey.

They found that medical visits for ear infections among children younger than 5 declined 17 percent in that time, and antibiotic prescription rates dropped 27 percent.

The study attributed the decrease to a 36 percent reduction in antibiotic prescriptions for respiratory tract infections. Rate of doctor visits for ear infections fell 33 percent over the study period, and rates of antibiotic prescriptions specifically for ear infections fell 36 percent, the researchers found.

Among those 5 and older, doctor visits for respiratory tract infections remained about the same, but antibiotic prescription rates for those infections dropped 18 percent. Prescription rates for antibiotics for other conditions for which antibiotics are rarely indicated dropped 24 percent in this age group, the study found.

In the past decade, initiatives in the United States have urged the judicious use of antibiotics, particularly for acute respiratory tract infection, which is a common reason for people to see a doctor and a frequent reason for antibiotic prescriptions, especially for young children, the researchers noted.

The use and misuse of antibiotics can increase the likelihood that bacteria will become resistant to antibiotics. Infections caused by antibiotic-resistant microorganisms have

been associated with increased illness, death and substantial costs, the researchers said.

Dr. Stuart B. Levy, president of the Alliance for the Prudent Use of Antibiotics and a professor of medicine, molecular biology and microbiology at Tufts University School of Medicine, said he thinks the trend toward less antibiotic use is encouraging.

"It's a wonderful finding," Levy said. "The message is getting out there. There is a major thrust in the appropriate use of antibiotics— the realization that if we reduce the use of antibiotics, we will reduce the levels of resistance." Levy added that it also has become easier for doctors to tell patients they don't need antibiotics.

"Now patients are saying: 'If I don't need the antibiotic, why should I take it?' That is a good sign," he said.

People are getting the message that "antibiotics are not cure-alls, and a consequence of antibiotic usage and misuse is the resistance that emerges," Levy said. <http://tinyurl.com/lp4h79>



### **BRITISH LUNG FOUNDATION WELCOMES VICTORY ON AIR TRAVEL DISCRIMINATION**

The British Lung Foundation welcomed a significant step forward in their ongoing campaign to end the discrimination people with a lung condition can experience when they travel on planes. Thomson airlines announced that they will now allow people who rely on supplementary oxygen to access the airlines' supply or bring their own, completely free of charge, making them an example of best practice on this issue.

Currently 90,000 people in the UK with respiratory diseases such as Chronic Obstructive Pulmonary Disease (COPD), Cystic Fibrosis and Pulmonary Hypertension need some form of supplementary oxygen for at least 15 hours a day due to the low levels of oxygen in their blood. For these people portable oxygen creates the same degree of freedom and independence that a wheelchair gives to people with other disabilities.

The announcement was made by Carl Gissing, Director of Customer Services for Thomson Airways on Radio 4's 'You and Yours' programme following campaigning by the British Lung Foundation to end the additional charges and restrictions that are placed on people travelling with oxygen.

The vast majority of airline companies do not allow people to bring their own portable oxygen concentrator or cylinder on to their planes while simultaneously charging hundreds - and sometime thousands - of pounds extra to use the supplementary oxygen that the airline provides.

The British Lung Foundation believes that this is a clear case of discrimination and is writing to all major airlines that fly from the UK to ask them to drop these additional charges.

British Lung Foundation spokesperson, David Buckle said: "We are delighted that Thomson has changed their policy to make air travel more accessible for people with a lung condition who need supplementary oxygen.

"Having supplementary oxygen is as essential to someone with a lung condition as a wheelchair is to someone with other disabilities. We are now urging all other airlines to follow Thomson's lead".

<http://tinyurl.com/pq4zcu>



### **U-M RESEARCHERS DISCOVER THERAPEUTIC TARGET THAT COULD HELP PATIENTS WITH PULMONARY FIBROSIS**

*Research published in Nature Medicine shows successful genetic and pharmacologic treatment in mice that could impact other fibrotic diseases*

A diagnosis of Idiopathic Pulmonary Fibrosis is not much better than a death sentence: there is no treatment and the survival rate is less than three years.

But researchers at the University of Michigan have discovered that targeting of a novel gene utilizing genetic and pharmacologic strategies was successful in treating pulmonary fibrosis in mice and will be developed for future testing in humans.

The treatments attack an oxidant-generating enzyme, NOX4, that researchers discovered is involved in the fibrotic process — which involves scar-like tissue formation in an organ such as the lung. The researchers' findings will be published in the September issue of the journal Nature Medicine.

"We've identified the target. We know the enemy now," said Subramaniam Pennathur, M.D., assistant professor of internal medicine/nephrology. "This is the first study that shows pulmonary fibrosis is driven by this NOX4 enzyme.

"But what's really significant is this discovery may have relevance to fibrosis in other organ systems, not just the lung." So those suffering from common cardiac or kidney diseases, which often involve fibrosis, also may benefit from treatments stemming from this research, Pennathur said.

Pennathur said continued support from the National Institutes of Health will eventually allow researchers to take the treatment to human studies. The University of Michigan also has filed for patent protection and is currently looking for a licensing partner to help bring the technology to market.

The discovery was made in the University of Michigan lab of Victor J. Thannickal, M.D. He was assisted by Louise Hecker, Ph.D., a post-doctoral research fellow.

Thannickal said the study points to a very viable treatment strategy for idiopathic pulmonary fibrosis, and researchers saw success both in mouse models of lung fibrosis and in fibrogenic cells isolated from lungs of patients with Idiopathic Pulmonary Fibrosis.

"It remains to be seen if fibrosis is reversible," he said. "But therapeutic targeting of this pathway this may allow us to halt the progression of fibrosis and preserve lung function."

The lung disease often affects older people, Thannickal said, and its cause is generally unknown. It is possible that cumulative injuries like exposure to environmental toxins and pollutants in genetically susceptible individuals could contribute to causing fibrosis.

There is a gradual scarring of the lung, thickening and contracting the organ until it loses its ability to exchange oxygen with blood, Hecker said. Patients experience extreme fatigue, rapid weight loss, chronic cough and shortness of breath.

There are five million people worldwide that are affected by this disease, according to the Pulmonary Fibrosis Foundation. In the United States there are over 100,000 patients with Pulmonary Fibrosis.

When U-M researchers induced the fibrotic process in the mice, they discovered that the NOX4 enzyme was elevated. By knocking down that enzyme at the genetic level or inhibiting its activity, the fibrosis was stopped, Hecker said.

"So we may be able to halt lung scarring even after the injury has occurred and fibrosis is set in motion," she said. "This research provides proof of concept that we can target this pathway for therapeutic benefit, which could potentially be used in humans."

<http://tinyurl.com/nby9hm>



## GREEN SOLUTIONS

- Use a programmable thermostat to efficiently regulate your indoor climate.
- To keep vast amounts of cold from getting in and heat from getting out use draft excluders at the base of your doors.
- Instead of using plastic bags and plastic wrap, use reusable food containers for leftovers and lunches.
- Collect rain water in a rainwater storage tank or barrel and use it to water your lawn and garden.
- Instead of buying bottled water, use a water filter instead.
- Replace your current shower head with a low-flow showerhead, it can save you gallons of water each time you use it.
- Buy potted flowers instead of cut flowers. They last longer, improve indoor air quality and can even be self-watering.
- Switch to reusable beverage containers instead of paper, Styrofoam and plastic.
- Replace incandescent light bulbs with compact fluorescents.
- Replace your toilet with a low-flow model or place a brick or similarly voluminous object in the tank of your toilet.

For more ideas click here:

[http://www.treehugger.com/files/2006/04/25\\_ways\\_to\\_save.php](http://www.treehugger.com/files/2006/04/25_ways_to_save.php)



## FOR ENERGY AND WEIGHT LOSS—THE SUNRISE SAMMIE

Whole Wheat English Muffin

Ham, Romaine, Tomato, Cheddar, Egg

414 calories

19 g fat (10 g saturated); 4 g fiber; 29 g protein

1,210 mg sodium

Studies show that people who choose quality protein over refined carbohydrates for breakfast are able to burn 65 percent more calories and maintain higher levels of energy throughout the day. Choose an English muffin over a roll or bagel to keep the carb count low. Eggs add brain-boosting lutein and choline, and ham can be almost as nutritious as lean white turkey meat. The only cause for concern in this sandwich is the cheddar, which is by far the most caloric cheese option—but the 9 grams of protein it offers is bound to keep you feeling fuller, longer. (*just watch the sodium content*).

## BEST HEART DISEASE AND STROKE TREATMENTS FOR PATIENTS WITH DIABETES FOUND WITH NEW TOOL

Researchers from North Carolina State University and Mayo Clinic have developed a computer model that medical doctors can use to determine the best time to begin using statin therapy in diabetes patients to help prevent heart disease and stroke.

"The research is significant because patients with diabetes are at high risk for cardiovascular disease and statins are the single most commonly used treatment for patients at risk of heart disease and/or stroke," says Dr. Brian Denton, "and this model can help determine the best course of action for individual patients based on their risk of developing cardiovascular disease." Denton is an assistant professor in NC State's Edward P. Fitts Department of Industrial & Systems Engineering and lead author of the study.

Statins are a key component of current cardiovascular medical treatment guidelines, Denton says. They lower cholesterol levels and may significantly reduce the risk of heart attack and stroke, particularly in patients that are considered to be at high risk.

The researchers developed a new mathematical model that examines various possible treatment policies to see how they influence short-term and long-term health outcomes for patients. The model shows how people are affected by diabetes, and how their health changes over time as the disease advances and patients age.

The new model incorporates patient-specific data. An established risk model calculates each patient's probability of heart attack and stroke based on risk factors, such as their cholesterol, blood pressure, etc. This overall risk "score" is used to weigh the medical advantages of beginning statin therapy against the financial cost of the statins.

Overall, by accounting for the progression of diabetes, the patient's specific risk score and the cost-benefit analysis, the new model may help patients and doctors decide on the optimal time to begin statin therapy.

Denton says the new model has not yet been put into practice, but that the research team plans to develop a pilot to put the tool into the hands of medical professionals.

<http://tinyurl.com/mjt67>



## EAT THIS CEREAL TO PROTECT YOUR BLOOD VESSELS

The lining of your blood vessels? Super important. Keeping those cells healthy can help ward off heart disease and more.

So treat them right. Eat your oatmeal. Or your Fiber One. A recent study suggests that a high-fiber breakfast may be kinder to the lining of your blood vessels than a high-glycemic-index breakfast like cornflakes.

### Breakfast Breakthrough

When researchers evaluated how eating different types of food affected the health and function of the endothelium -- that all-important layer of cells that lines the inside of your blood

vessels -- the results suggested that glycemic index matters. After having cornflakes, a high-fiber cereal, a glucose supplement, or just water first thing in the morning, the study participants' endothelial cells were most impaired after having either the cornflakes or the supplement. Not good, because impaired function may eventually translate to damage -- and damage opens the door to atherosclerosis and heart disease. Is your blood pressure also putting your heart at risk? Find out here.

### Glycemic Index Breakdown

Researchers don't really know why the foods on the higher end of the glycemic index, like cornflakes and glucose, had a harsher effect on participants' blood vessels. All that is known for sure is that these types of food move blood sugar higher, faster. And somehow this may translate into wear and tear on blood vessels. Here's a more detailed explanation of the glycemic index.

<http://tinyurl.com/oo6esu>



### MOST CANADIANS WANT PET-FREE FLIGHTS

A new survey has found that 80% of Canadians want airlines to offer pet-free flights, and that they expect their government to take action on the issue.

As Air Canada prepares to join WestJet in allowing pets to travel in the passenger cabin of airplanes, the Canadian Lung Association's survey finds that most Canadians believe that pets in the cabin can be detrimental to the health and safety of passengers and crew members. The association says that because airplane cabins re-circulate air, even a small amount of an allergen like hair, saliva or dander of a pet can spread quickly throughout the airplane cabin, and reach every passenger on the plane. Pet allergens can trigger wheezing, coughing and swelling of the airways in people who have allergies, asthma or Chronic Obstructive Pulmonary Disease (COPD). These reactions can be serious and even life-threatening.

"If someone brings a dog or cat onto an airplane and there's someone with asthma on board, it can trigger a potentially fatal asthma attack," said Dr. Peter MacLeod, medical spokesperson for The Canadian Lung Association, "While such attacks would be rare if your asthma or COPD are properly managed, it would take just one fatal case to have these policies reversed, and it's a shame if it comes to that. From our perspective it is better to be safe now with the health of Canadian travelers and air crew, then sorry later."

The poll also found that 75% of Canadians believe that the federal government has a responsibility to take action on this issue in order to protect the health and safety of passengers and crew. The Lung Association is calling on the House of Commons Standing Committee on Health to examine this issue when the Committee resumes sitting in the fall.

"We all love pets. This is not about trying to deny people the privilege of traveling with their furry companions. We think we can arrive at an important middle ground that balances the love of our pets with the health and safety of airline passengers and crews," said Cameron Bishop, Director of Government Affairs for The Lung Association.

<http://tinyurl.com/pfkk68>

### LOW BIRTH WEIGHT LINKED TO LONG-TERM RESPIRATORY PROBLEMS

Infants who weigh less than five and a half pounds at birth often enter the world with a host of medical complications, including respiratory problems. New research shows that these respiratory problems may persist well beyond their infancy and childhood and into adulthood.

"We report a previously unrecognized excess risk of hospitalization for respiratory illnesses in young adults with a history of low birth weight," wrote lead researcher Eric C. Walter, M.D., of the University of Washington Division of Pulmonary and Critical Care. "Our findings suggest that not only are [low birth weight] survivors at increased risk for long-term respiratory disorders, but that these disorders are clinically significant and associated with increased health care utilization."

The study appears in the July 15 issue of the American Journal of Respiratory and Critical Care Medicine.

The researchers used hospitalization records from the Washington State Comprehensive Hospital Abstract Reporting System's discharge database between January 1, 1998 and December 31, 2007. They selected as potential cases any person who was 18 years old at the time of hospitalization and who was discharged with a respiratory code listed among the top four diagnoses. They then linked these cases to birth weight data listed on birth certificates where possible. Control subjects were randomly selected from birth certificate data.

They found that individuals with very low birth weight (less than 1.5 kg, or 3.3 lbs.) or moderately low birth weight (1.5 to 2.5 kg or 3.3 to 5.5 pounds) had a 83 and 34 percent higher risk of hospitalization for respiratory diagnoses respectively. Those who had a history of very low birth weight had twice the risk of being hospitalized for asthma or respiratory infection and 2.6 times the risk of respiratory failure requiring mechanical ventilation.

After adjusting for covariates, including demographic characteristics and maternal smoking, the significant association between birth weight and risk of hospitalization persisted. Furthermore, while the data could not definitively prove a linear link, researchers did note a trend toward greater risk of respiratory problems with lower birth weights.

"In our study the percentage of respiratory disease attributable to moderately or very low birth weight was estimated to be 1.8 percent. If this were extrapolated to the 1.2 million U.S. hospitalizations for respiratory illnesses per year for ages 18 to 44, low birth weight may account for over 22,000 adult hospitalizations per year, with charges in excess of \$225 million per year," said Dr. Walter.

While the study did not distinguish between premature birth and retardation of in utero development as causes of low birth weight, previous research has found that both conditions increase risk of abnormal pulmonary function in adolescence and adulthood.

Dr. Walter notes that maternal smoking is a risk factor for low birth weight, and that children of mothers who smoked are more likely to smoke themselves. The relationship, therefore,

is difficult to fully tease apart. "It is unknown if adults with a history of low birth weight are more likely to smoke than adults with a history of normal birth weight," he said. "[In this study] we did not find that maternal smoking confounded the affect of low birth weight on adult respiratory disease, but further research is needed comparing hospitalization and smoking rates between adults with history of low birth weight and normal birth weight to better understand this relationship."

While more research is needed to further clarify the relationship between birth weight and subsequent respiratory problems, these results do strongly suggest a looming public health issue. Since the mid-1980s, the proportion of low- and very low birth weight births in the U.S. has increased by more than 20 percent, and in 2005, there were 330,000 combined low- and very low birth weight births in the U.S.

<http://tinyurl.com/nefz2p>



### **BEING OVERWEIGHT OR OBESE IN MID-LIFE LINKED TO INCREASED RISK OF REDUCED MEMORY AND THINKING SKILLS IN LATE LIFE**

Individuals with higher mid-life Body Mass Index (BMI) in the 1960s have been found to have lower memory and thinking skills and a sharper decline in these abilities in old age, compared to those with lower BMI in mid-life.

"The adverse effects of being overweight and obese are not limited to cardiac function, but also extend to brain function," says Anna Dahl doctoral student at the School of Health Sciences, Jönköping. Several studies, including studies from the Swedish Twin Registry, have shown that individuals who are overweight or obese in mid-life are at an increased risk of suffering from dementia.

"We have extended this knowledge and shown that being overweight or obese in mid-life also negatively affects memory and thinking skills independent of dementia. Moreover, these skills decline more rapidly in old age among those who were overweight or obese in mid-life," writes Anna Dahl in an article published in the Journal of Gerontology.

"The steeper decline in memory and thinking skills observed among individuals who were overweight or obese in mid-life, cannot be explained in our study by an increased prevalence of cardiovascular diseases," says Anna Dahl. "There are probably other mechanisms that explain this link."

The association between BMI and memory and thinking skills has been investigated in a study of the Swedish Twin Registry, the Swedish Adoption Twin Study of Aging (SATSA), carried out as a joint project between the School of Health Sciences, Jönköping and the Karolinska Institute.

<http://tinyurl.com/m6jg6p>



### **MUSCLE DAMAGE MAY BE PRESENT IN SOME PATIENTS TAKING STATINS**

Structural muscle damage may be present in patients who have statin-associated muscle complaints, found a new study in CMAJ (Canadian Medical Association Journal).

Statins are one of the most widely prescribed medications in the world, given their importance in reducing the risk of

cardiovascular disease. Many patients on statins develop muscle weakness and pain. In some cases, muscle biopsies show underlying structural injury, even in patients without elevated levels of circulating creatine phosphokinase.

The study, by researchers from the University of Bern, Switzerland and the Tufts-New England Medical Center in Boston, Massachusetts, looked at muscle biopsies from 83 patients, 20 of whom had never taken statins. They found significant muscle injury in patients who had taken statins, including several who had discontinued medication before the biopsy.

"Although in clinical practice, the majority of patients with muscle symptoms improve rapidly after cessation of therapy, our findings support that a subgroup of patients appears to be more susceptible to statin-associated myotoxicity, suffering persistent structural injury," write Dr. Annette Draeger from the University of Bern and coauthors.

They note there is a need to evaluate alternative treatment strategies for patients with significant muscle symptoms.

<http://tinyurl.com/nxctdk>



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<http://tinyurl.com/nxctdk>



### **OBESITY EMERGES AS RISK FACTOR IN SEVERE FLU**

People who are obese but otherwise healthy may be at special risk of severe complications and death from the new H1N1 swine flu virus, U.S. researchers reported on Friday.

They described the cases of 10 patients at a Michigan hospital who were so ill they had to be put on ventilators.

Three died. Nine of the 10 were obese, seven were severely obese, including two of the three who died.

The study, published in advance in the Centers for Disease Control and Prevention's weekly report on death and disease, also suggests doctors can safely double the usual dose of oseltamivir, Roche AG's antiviral drug sold under the Tamiflu brand name.

"What this suggests is that there can be severe complications associated with this virus infection, especially in severely obese patients," said CDC virus expert Dr. Tim Uyeki. "And five of these patients had ... evidence of blood clots in the lungs. This has not been previously known to occur in patients with severe influenza virus infections," Uyeki said in a telephone interview.

Dr. Lena Napolitano of the University of Michigan Medical Center and colleagues studied the cases of 10 patients admitted to the university's intensive care unit with severe acute respiratory distress syndrome caused by infection with H1N1.

"Of the 10 patients, nine were obese (body mass index more than 30), including seven who were extremely obese (BMI more than 40)," they wrote in their report. Their study was not designed to see if obesity or anything else poses a special risk factor for flu. But the researchers were surprised to see that seven of the 10 patients were extremely obese.

#### **MULTIPLE ORGAN FAILURE**

Nine had multiple organ failure, which can be seen in influenza, but five had blood clots in the lungs, and six had kidney failure. None has fully recovered, the researchers said.

The H1N1 swine flu virus first emerged in Mexico in March and was spreading out of control in the United States by the time it was identified at the end of April. The World Health Organization declared a pandemic in June.

While it is causing moderate illness, all influenza viruses can be deadly and this one is no exception. It has killed close to 500 people globally, more than 200 in the United States alone. However, the new virus has a slightly different pattern from seasonal flu -- it spreads in the summer months, attacks young adults and older children, and may affect the body slightly differently.

As with H5N1 avian influenza, which only rarely attacks people, patients seem to survive better if they get Tamiflu for longer than the usual five-day treatment course, Uyeki said. "We don't know if it is necessary for a higher dose of the drug to be given to patients who are obese," he said.

"The high prevalence of obesity in this case series is striking," the CDC's commentary accompany the report reads. "Whether obesity is an independent risk factor for severe complications of novel influenza A (H1N1) virus infection is unknown. Obesity has not been identified previously as a risk factor for severe complications of seasonal influenza."

<http://tinyurl.com/nugz9h>



#### **SLEEP DEPRIVATION TIED TO WEIGHT GAIN**

Failure to get a full night's sleep can lead to weight gain or compromise the beneficial effects of a reduced calorie diet on total body fat, according to presentations at SLEEP 2009, the

annual meeting of the Associated Professional Sleep Societies, underway this week in Seattle.

"Reduced sleep duration has become a common aspect of the westernized lifestyle, defined by physical inactivity and overeating," Dr. Plamen Penev, from the University of Chicago, told Reuters Health. "Diet-induced weight loss is a major behavioral strategy for metabolic risk reduction. However, whether it is effective during times of reduced sleep duration is unknown.

Penev and his associates studied nine healthy overweight volunteers. The average subject age was 40 years and the average body mass index was 27.5, which is in the overweight range. The subjects completed two 14-day trials, conducted at least 3 months apart, during which time they spent either 5.5 hours or 8.5 hours in bed per night.

During both study periods, they consumed a nutritionally balanced diet containing calories up to 90 percent of their resting metabolic rate. Weight loss during each trial was similar (6.6 vs 6.4 lbs), respectively).

However, fat represented only 26 percent of the weight loss during periods of sleep restriction compared with 57 percent during the 8.5-hour sleep intervals, indicating an increased loss of lean body mass occurred during reduced sleep conditions.

Penev and colleagues conclude that the neurologic and endocrine system's response to the reduced calorie diet was amplified by recurrent sleep restriction, as evidenced by increased concentrations of ghrelin, a hormone reported to stimulate the appetite.

In another study conducted by Dr. Siobhan Banks and associates at the University of Pennsylvania in Philadelphia, 92 healthy adults (22 to 45 years old) spent 2 nights of unrestricted sleep (10 hours in bed), followed by 5 nights of restricted sleep (4 hours in bed), and then 4 nights of recovery. Nine control subjects spent 10 hours per night in bed during the 11-day study.

Sleep-restricted subjects experienced an average weight gain of 2.9 lbs. during the trial protocol, even though they reported decreases in appetite, food cravings and food consumption. By contrast, there was no significant weight gain in the control group.

In a prepared statement, Banks, currently at the University of South Australia, noted that "During real-world periods of sleep restriction...keeping up regular exercise is just as important as what food you eat." <http://tinyurl.com/lpyzu3>



#### **SOME BLOOD PRESSURE DRUGS MAY HELP PROTECT AGAINST DEMENTIA, STUDY SHOWS**

A particular class of medication used to treat high blood pressure could protect older adults against memory decline and other impairments in cognitive function, according to a newly published study from Wake Forest University School of Medicine.

Research suggests that some of the drugs classified as angiotensin-converting enzyme (ACE) inhibitors, specifically those types of ACE inhibitors that affect the brain by crossing

the blood-brain barrier, may reduce inflammation that could contribute to the development of Alzheimer's disease, a major cause of dementia.

The study appears in the current issue of Archives of Internal Medicine. "High blood pressure is an important risk factor for Alzheimer's disease and vascular dementia," said Kaycee Sink, M.D., M.A.S., lead author of the study, geriatrician and an assistant professor of internal medicine – gerontology. "Our study found that all blood pressure medications may not be equal when it comes to reducing the risk of dementia in patients with hypertension."

Dementia is the broad term used to describe conditions in the brain that cause loss of brain function. There are several different causes of dementia, but Alzheimer's disease and strokes are two of the most common. People with dementia begin to lose their memory and may not be able to think well enough to do normal activities, such as getting dressed or eating, may lose their ability to solve problems or control their emotions, may experience personality changes and/or may become agitated or see things that are not there.

While memory loss is the hallmark of dementia, it does not, by itself, mean an individual has dementia. People with dementia have serious problems with two or more. Someone is diagnosed with dementia every 70 seconds. It is estimated that the number of people in the United States living with dementia will increase to about 13 million by the year 2050. Therefore, delaying the onset of dementia, even by one year, would have a substantial impact on public health.

Hypertension, or high blood pressure, is a major contributor to the development of all types of dementia. Many of the estimated one in three U.S. adults who have hypertension are treated with ACE inhibitors, a class of drugs that help lower blood pressure by causing the blood vessels to relax and widen.

Some ACE inhibitors are known as "centrally-acting" because they can cross the blood-brain barrier, a specialized system of tiny blood vessels that protects the brain from harmful substances in the blood stream. Centrally-acting ACE inhibitors include captopril (Capoten®), fosinopril (Monopril®), lisinopril (Prinivil® or Zestri®), perindopril (Aceaon®), ramipril (Altace®) andtrandolapril (Mavik®).

For the study, researchers analyzed data from the Cardiovascular Health Study, a long-term study of cardiovascular risk factors that involved 5,888 people over 65 years old from Forsyth County, N.C.; Sacramento County, Calif.; Pittsburgh, Pa.; and Washington County, Md.

The investigators specifically looked at 1,074 study participants who were free of dementia when they entered the study and who were being treated for hypertension. They evaluated whether exposure to ACE inhibitors in general – and to the centrally-active versus non-centrally active drugs – was related to dementia development and cognitive decline.

Compared to other classes of anti-hypertensive drugs, researchers found no association between exposure to ACE inhibitors as a class and the risk of dementia. There was a significant cognitive benefit, however, seen in those individuals treated with the centrally-active ACE inhibitors specifically.

The study found an association between taking centrally-active ACE inhibitors and lower rates of mental decline as measured by the Modified Mini-Mental State Exam, a test that evaluates memory, language, abstract reasoning and other cognitive functions. The research showed that participants who were exposed to ACE inhibitors that cross the blood-brain barrier saw an average 65 percent less cognitive decline per year of exposure compared to participants taking other blood pressure medications.

Researchers also found that non-centrally active ACE inhibitors were associated with an increased risk of dementia and the people taking them were more likely to develop difficulty performing daily activities. Specifically, participants who, for three years, took ACE inhibitors that do not cross the blood-brain barrier were at a 73 percent greater risk of developing dementia than were the individuals taking other anti-hypertensive drugs.

"ACE inhibitors have been shown to be beneficial to the heart and kidneys, and this study gives evidence that they may also be beneficial to the brain—at least the ones that are able to get into the brain," Sink said. "We already know it is important to treat high blood pressure and keep it under good control. But our study finds that some blood pressure medications, such as the ACE inhibitors that cross the blood brain barrier, may offer benefits to the brain that others do not. If a patient has an indication for an ACE inhibitor, it makes sense to choose one that crosses the blood brain barrier. This is quite different from the typical recommendations for physicians to avoid medications in older adults that get into the brain."

<http://tinyurl.com/ngw26a>



## **BYPASSING BYPASS SURGERY--NEW BLOOD VESSELS GROWN TO COMBAT HEART DISEASE**

Although open-heart surgery is a frequent treatment for heart disease, it remains extremely dangerous. Now groundbreaking research from Dr. Britta Hardy of Tel Aviv University's Sackler School of Medicine has shown the potential for an injected protein to regrow blood vessels in the human heart — eliminating the need for risky surgery altogether.

In heart disease, blood vessels are either clogged or die off, starving the heart of oxygen and leaving it highly susceptible to a cardiac attack. Dr. Hardy and her research partner Prof. Alexander Battler have developed a protein-based injection that, delivered straight to muscles in the body, sparks the regrowth of tiny blood vessels. These new vessels in the heart could give millions of people around the world a new lease on life. Research on the procedure was recently published in Biochemical Pharmacology.

A treatment without side effects or inflammation

"The biotechnology behind our human-based protein therapy is very complicated, but the goal is simple and the solution is straightforward," says Dr. Hardy. "We intend to inject our drug locally to heal any oxygen-starved tissue. So far in animal models, we've seen no side effects and no inflammation following our injection of the drug into the legs.

The growth of new blood vessels happens within a few weeks, showing improved blood circulation."

The protein solution can also be added as a coating to a stent. Currently, the implantation of a stent is accompanied by a high risk for blood clots, which necessitates the use of blood thinners. "We could coat a stent with our peptide, attracting endothelial stem cells to form a film on the surface of the stent," Dr. Hardy explains. "These endothelial cells on the stent would eliminate the need for taking the blood thinners that prevent blood clots from forming."

If investment goals are met, Dr. Hardy anticipates toxicity studies and Phase I trials could be complete within two years. Saving a leg, saving a life

The research began with the hope of preventing leg amputations, positing that proteins from the human body could be used to trigger the growth of new blood vessels. Dr. Hardy started by studying a library of peptides and testing them in the laboratory. With the assistance of philanthropic funding from the Colton family in the U.S., Dr. Hardy was able to confirm initial results. She then took some of the isolated and synthesized peptides and tested them in diabetic mice whose legs were in the process of dying.

Although diabetes is known to decrease blood circulation, Dr. Hardy found that her therapy reversed the decrease. "Within a short time we saw the formation of capillaries and tiny blood vessels. After three weeks, they had grown and merged together with the rest of the circulatory system," she says. In mice with limited blood circulation, she was able to completely restore blood vessels and save their legs. It was then a short step to studying the applicability of the research to cardiac patients.

A new therapy could be commercially available soon. Unlike studies for other drugs, clinical results with the blood vessels are practically immediate. "It's pretty obvious if there is regrowth or not. Our technology promises to regrow blood vessels like a net, and a heart that grows more blood vessels becomes stronger. It's now imaginable that, in the distant future, peptide injections may be able to replace bypass surgeries," Dr. Hardy concludes.

<http://tinyurl.com/q6a7oq>



## EXERCISE AS MEDICINE

### *Physical activity lowers risk for a wide range of diseases*

In the 19th century, most work involved physical activity; in the 20th century, exercise became a leisure pursuit; today, it's an urgent medical necessity.

Exercise: It's cheap, readily available, and the single most effective step nonsmokers can take to avoid chronic and potentially fatal diseases. If it were being hawked on late-night television, you'd think the phone lines would be tied up for hours.

But regular physical activity remains a hard sell. Despite mounting evidence that it lowers the risk for obesity, heart disease, diabetes, depression, and many forms of cancer, the average citizen is increasingly sedentary. Still, the U.S. Department of Health and Human Services (HHS) isn't giving up on us.

In 2007, the agency convened an expert committee to evaluate a decade of scientific evidence on the benefits of physical activity. Committee member Dr. I-Min Lee, who also serves on the Harvard Women's Health Watch advisory board, said she and her colleagues found an "impressive range of health benefits coming from being physically active." They submitted their findings, and in the fall of 2008, the U.S. government issued a detailed exercise prescription for the nation.

## THE GROUND RULES

The "2008 Physical Activity Guidelines for Americans" ([www.health.gov/PAGuidelines](http://www.health.gov/PAGuidelines)) are more extensive than those of most other health organizations, and more extensive than earlier HHS recommendations. While assuring us that a couple of hours a week of moderate activity provides important health benefits, the guidelines also stress that more is indeed more -- finding added benefit from exercising longer and doing so with greater intensity. As Dr. Lee puts it, "Any physical activity one can do is good, but more is better."

The guidelines are also more inclusive. They apply not just to the standard adult audience but to almost everyone age 6 and over -- children, adolescents, pregnant women, seniors, and people with chronic diseases and disabilities. This time around, no one gets off the hook. Adults, whether 18 or 81, are urged to get no less than 150 minutes (two and a half hours) of moderate activity or 75 minutes (one hour and 15 minutes) of vigorous activity -- or some combination of the two -- each week. Sessions should last at least 10 minutes and be spread evenly through the week.

Adults are advised to fit in two weekly sessions of strength training, as well. The authors urge even people with medical conditions to meet these standards, though they acknowledge this may require a gradual buildup.

## EXERCISING WITH HEALTH CONDITIONS

The HHS exercise guidelines emphasize that people with chronic medical conditions and disabilities should get just as much exercise as other adults, if they can. This prescription may be daunting, especially for those with disabilities that sap energy or hamper mobility, like depression, multiple sclerosis, and arthritis. But regular exercise can actually improve mood and energy level, increase muscle and bone strength, and reduce the pain associated with many health problems. So even if a health condition makes it difficult to meet the guidelines, you should participate in any activity as best you can and avoid inactivity.

The HHS guidelines advise patients with disabilities or chronic conditions to speak with their health care providers about appropriate kinds and levels of exercise.

The National Institutes of Health and other organizations like the American Heart Association and the National Multiple Sclerosis Society provide specific, condition-based exercise information. For example, the National Osteoporosis Foundation suggests low-impact exercises that build bone and minimize the risk of fracture during workouts. If you're not sure where to go, just type "exercise" and the name of a

condition into an Internet search engine. The most reliable Web sites are those ending in ".gov," ".org," or ".edu."

The American College of Sports Medicine Web site also has detailed advice for people with certain chronic health conditions. It provides topical paperback guides ("Action Plans") that discuss particular challenges associated with menopause, allergies, arthritis, diabetes, osteoporosis, high cholesterol, and high blood pressure.

The site also offers "Your Prescription for Health" -- concise tip sheets on issues related to physical activity, including Alzheimer's disease, blood clots during exercise, anxiety and depression, heart conditions, cancer, low back pain, and visual impairment. To order or download these materials, go to [www.exerciseismedicine.org/public.htm](http://www.exerciseismedicine.org/public.htm).

Children and adolescents should be getting even more than adults: at least an hour a day (420 minutes per week), including both aerobic activity and exercise that builds muscle and bone.

The guidelines also distinguish between different levels of physical activity. For example, for most middle-aged adults, moderate-intensity aerobic exercise is comparable to walking three to five miles an hour; vigorous exercise is anything higher. Or, on a zero-to-10 scale, with zero as the amount of activity involved in sitting, and 10 as the effort of running at top speed, moderate exercise begins at five and vigorous exercise at seven.

Perhaps the simplest way to distinguish moderate from vigorous exercise is by trying to speak as you work out: if you can talk while working out but have a hard time singing, you're exercising moderately; if you find it difficult even to talk, that's vigorous.

Strength training should involve all the major muscle groups of the legs, hips, back, chest, stomach, shoulders, and arms. You should repeat each exercise for each muscle group eight to 12 times. Many aerobic activities also provide strength training: for example, race-walking strengthens legs and hips; rowing builds muscles in the arms, legs, chest, and shoulders.

### HOW MUCH IS ENOUGH?

Go beyond the basics if you can, say the guidelines. Once you're routinely logging the recommended levels of aerobic activity, start to add a few minutes a day. (Ramping up slowly reduces the likelihood of injury.) The HHS committee found that you can get even greater health benefits and more effective weight control when you reach twice the recommended weekly amount -- that is, 300 minutes of moderate activity, 150 minutes of vigorous activity, or a combination of the two. More than that may be even better.

### GETTING GOING

Anyone who's followed a regular exercise regimen knows that the hardest part is getting started. Often, it takes a wake-up call, whether that's a heart attack or just the inability to zip your favorite skirt or pants. If you need a nudge but don't want to wait for an unwelcome event, the President's Council on Physical Fitness and Sports (PCPFS) has a tool that might help -- the Adult Fitness Test.

Originally convened during the Eisenhower administration, the PCPFS celebrated its 50th birthday in 2006 by producing an

instrument that adults can use to determine how fit they are in terms of aerobic capacity, muscle strength, and flexibility.

All you have to do is walk a mile, do a few sit-ups and push-ups, and perform a single stretching exercise, and you can find out where you fall on the nation's fitness spectrum. If you're unpleasantly surprised, the PCPFS offers some pointers for improving your score. The test can be downloaded at [www.adultfitnessstest.org](http://www.adultfitnessstest.org).

The American College of Sports Medicine (ACSM) has developed two interactive questionnaires to help provide you with a realistic basis for establishing a routine. The first, a health assessment form, helps you gauge the factors that might pose risks or limit your ability to exercise. You can print out the results and share them with your clinician.

The second questionnaire helps identify attitudes or habits that could undermine your resolve and generates personalized advice for overcoming them. Because research confirms that people with well-designed programs and goals are more likely to succeed, the ACSM also offers printable, customizable planning forms including a cost/benefit analyzer, an exercise time scheduler, a goal-setter, and a form you sign pledging to make exercise a ritual. All are available at [www.aicr.org/exerciseplan.com/assessment](http://www.aicr.org/exerciseplan.com/assessment).

**"Tips to Help You Get Active, from the National Institute of Diabetes and Digestive and Kidney Diseases"** is a 24-page guide that could be subtitled "No More Excuses." It offers helpful suggestions for overcoming just about every barrier to exercise you can think of -- psychological, physical, or environmental. <http://www.nidk.nih.gov/publications/tips.htm>.  
**KEEPING AT IT**

If you find that sticking to a regimen is at least as challenging as starting one, several free offerings from health organizations may help you stay on board:

**"Be Active Your Way"** is a quick reference for ways to incorporate the 2008 HHS activity recommendations into your life. The advice isn't new, but it's presented in an accessible and easy-to-follow way. You can order or download this booklet from the HHS [www.hhs.gov/PA/guidelines/adultguide](http://www.hhs.gov/PA/guidelines/adultguide).

**"Keys to Exercise,"** a video series produced by the ACSM and the American Heart Association, presents exercises that help improve strength, flexibility, and endurance. To reinforce the message that you don't have to go anywhere special to stay fit, many of these exercises are performed at home and require no special equipment. The videos can be viewed on your home computer; just go to [www.exerciseismedicine.org/KeystoExercise.htm](http://www.exerciseismedicine.org/KeystoExercise.htm).

**"Exercise: A Guide from the National Institute on Aging"** (NIA), dedicated to people over 65, emphasizes that our bodies don't transcend the need for exercise when we become eligible for Medicare. The 82-page guide does recognize and explain the changes that come with age, and it provides appropriate exercise programs, including suggestions for people with joint replacements, people who find it difficult to perform exercises on the floor, and people taking beta blockers (which can slow heart rate). It can be printed out or ordered from the NIA Web site, [nia.nih.gov/HealthInformation/Publications/ExerciseGuide](http://nia.nih.gov/HealthInformation/Publications/ExerciseGuide).

The ACSM has developed Current Comments, a series of two-page primers on a range of specific exercise topics. Titles include "Exercise and the common cold," "Exercise and age-related weight gain," "Exercise while traveling," and "Strength, power, and the baby boomer." These and many more are available under "Helpful Resources" at [www.acsm.org/public.htm](http://www.acsm.org/public.htm).

### KEEP IT SIMPLE

Simplicity is the key to establishing and maintaining a lifelong exercise program. If your routine requires little more than comfortable shoes and clothing, you're less likely to abandon it because of weather, travel, or changing schedules. Pick a time of day that works for you. Find a friend to do it with you.

With a little creativity and perhaps some help from the sources listed above -- you should be able to put together a combination of aerobic, strength-building, and flexibility exercises that enhance your health, improve your well-being, and keep you at it for the long haul. - <http://tinyurl.com/oybo4t>



### HEART RISKS RISE WITH SMOKELESS TOBACCO

*Increase is small but worth noting, expert says, as product use grows*

Smokeless tobacco increases the risk of fatal heart attack and stroke, say researchers who reviewed the results of 11 studies conducted in North America and Sweden.

In recent decades, the researchers noted, the use of smokeless tobacco products has increased in Europe and North America, particularly among people younger than 40, partly because the products are promoted as safer alternatives to cigarettes.

However, their review found that users of smokeless tobacco products had a slightly higher risk of death from heart attack and stroke than non-users. Smokeless tobacco was linked with 0.5 percent of all heart attacks in the United States and 5.6 percent in Sweden, and 1.7 percent of all deaths from stroke in the United States and 5.4 percent in Sweden, according to the report in the Aug. 18 online edition of BMJ.

The increased risk is small, but the consistency of the results among the studies included in the review suggests that the findings are credible, according to the researchers, led by Dr. Paolo Boffetta, of the International Agency for Research on Cancer in France.

If the association between smokeless tobacco products and increased risk for fatal heart attack and stroke is proven, the public health and clinical implications could be substantial, they said in urging more studies into the issue.

<http://tinyurl.com/mzvqsm>



### CHOLESTEROL CONTROL GENES ?

Twenty genes playing large roles in controlling cholesterol within cells have been identified through several innovative methods. These genes may also point the way to new risk factors for heart disease.

"Some of the genes identified by us as regulators of cellular cholesterol in future studies might turn out to be disease genes that contribute to hypercholesterolemia in some cases," Heiko

Runz of the University of Heidelberg was quoted as saying. "Moreover, the strategy we used could open a new avenue to identify risk factors for cardiovascular disease."

Researchers were in pursuit of new cholesterol-regulatory factors, and started by looking at genes that showed a similar behavior pattern already identified with cholesterol. RNA interference, a method used to identify cellular behaviors. It led the team to a list of 20 genes they believe to be relevant in maintaining cellular levels of cholesterol.

<http://tinyurl.com/myxjhm>



### LOW LEVELS OF VITAMIN B-12 LEADS TO SERIOUS HEALTH ISSUES

Vitamin B-12 is a water soluble vitamin that is not found in fruits and vegetables. It is derived from protein, and your body usually has a good bit stored. However, it can be depleted in individuals who are strict vegetarians or have a history of stomach ulcers, GERD, and other stomach disorders. Many people who have a medical history of stomach disorders are no longer able to absorb the vitamin from normal digestion. When adequate amounts of the vitamin are no longer attainable, homocysteine levels rise in the blood. Too much homocysteine is toxic and a host of dangerous disorders follow.

**Heart Disease:** Too much homocysteine leads to coronary heart disease, stroke, and peripheral vascular disease.

**Birth defects:** Women who have a low B-12 level early in pregnancy are 5 times as likely to have a child born with neural tube defects such as spina bifida

**Alzheimer's/dementia:** Too little B-12 leads to senility and buildup of the amyloid plaque found in Alzheimer's disease patients.

**Anemia:** B-12 is essential in blood cell formation and nervous system function. Without it pernicious anemia can develop.

Symptoms of low B-12 include extreme fatigue, dizziness, unexplained bruising, long/heavy menstrual periods, abnormal heart rhythm, forgetfulness, hair loss, and shortness of breath.

If you suspect a low level of B-12, schedule an appointment with your physician to make sure you do not have toxic levels of homocysteine. Your doctor will do a simple blood test to determine if you need sublingual supplements or monthly vitamin injections.

<http://tinyurl.com/m6xkr6>



### WARNING OVER EARLY PRESCRIBING OF INHALED STEROIDS FOR COPD PATIENTS

GPs have been warned against prescribing inhaled steroids too early in patients with COPD because of the associated risk of pneumonia. The government's drug safety watchdog, the Medicines and Healthcare Regulatory Agency, suggests steroids 'are being introduced earlier than current guidelines recommend'. It says combining LABAs with inhaled steroids has no proven significant benefits in mild disease, but that steroids significantly increase the risk of pneumonia.

NICE guidance, currently under review, says inhaled steroids should be added for severe disease with an FEV1 under 50% and where there are repeated exacerbations. Combination is better than monotherapy in all trials that have compared the two treatments, but the benefit is limited.

Inhaled steroids should be limited to when COPD progresses to severe disease, and never on their own, the MHRA says. Dr Steve Holmes, a GP in Shepton Mallet, Somerset and education lead of the General Practice Airways Group said the advice was 'very sensible'. We need to question the concept of automatically putting COPD patients on inhaled steroids. It is a legacy of old treatment ideas.'

<http://tinyurl.com/kvgjul>



## **MODERATE EXERCISE: NO PAIN, BIG GAINS**

### **Introduction**

America is in the grip of an energy crisis. The rising costs and dwindling supplies of fossil fuels get all the press, but from a medical point of view, the real crisis involves human energy -- or the lack thereof. In the United States, and throughout the industrial world, insufficient exercise is a major cause of morbidity and mortality. In America, it is an important contributor to 4 of the 6 leading causes of death: heart disease, cancer, stroke, and diabetes. In all, a sedentary lifestyle accounts for some 250,000 premature deaths annually. That means that 12% of all the deaths in America are caused by sloth, as are 23% of our chronic illnesses. It's a staggering burden of death, disability, and expense, and it's all the more tragic because it's unnecessary.

Modern epidemiologic, clinical, and laboratory studies have been documenting the health benefits of exercise for nearly 50 years, but fewer than 25% of Americans get the exercise that they need. What accounts for the gap between theory and practice?

In part, we are victims of our own success. Before the industrial revolution, about a third of all the energy used in American agriculture and manufacturing was provided by human muscles; now, that contribution is minuscule. We don't exercise because we no longer have to.

Cultural preferences and economic pressures add to the problem. The average American adult spends 170 minutes a day watching TV and movies and 101 minutes a day driving, but less than 19 minutes a day exercising. Spectator is a kind word for it; we are truly a nation of couch potatoes.

Healthcare professionals can't do much about our entertainment industry, advertising empire, or economic imperatives. And even if we could turn back from the information age, few would want to. But we can, and should, deal with another set of barriers to healthful exercise. In fact, our profession has erected some of these barriers. The first is the confusing mix of exercise guidelines and recommendations; for example, the US Surgeon General currently advocates 30 minutes of moderate exercise a day, whereas the Institute of Medicine calls for 60 minutes a day and the 2005 Dietary Guidelines for Americans recommends 30-90 minutes a day. The

second barrier has its roots in the very movement that puts exercise on the map, the aerobics revolution.

### **The Aerobics Doctrine**

The scientific study of exercise blossomed in the 1960s and 1970s. Its principal research tool was the maximum oxygen uptake test, which measures the amount of oxygen taken up by the lungs, pumped by the heart, and delivered to the muscles during maximal exertion on a treadmill or bicycle ergometer. Improvements in the maximum oxygen uptake, or VO2 max, quickly became the gold standard for judging the efficacy of exercise.

Research in many labs demonstrated that optimal improvement in VO2 max depends on rather vigorous exercise. The best results come from exercise that is intense enough to raise the heart rate to 70% to 85% of its maximum, prolonged enough to sustain that intensity for 20-60 minutes continuously, and frequent enough to occur 3-7 times a week. The aerobics doctrine was born.

In 1975, the American College of Sports Medicine issued its first exercise guidelines. They called for all healthy adults to exercise at aerobic intensity (60% to 90% of maximum) continuously for 20-30 minutes at least 3 times a week. These standards were soon adopted with only minor modification by the American Heart Association and the US Department of Health, Education, and Welfare, and they remained in effect for more than 2 decades.

#### **Unintended Consequences**

The aerobics doctrine gained acceptance just as Frank Shorter, Bill Rodgers, and Joan Benoit Samuelson showed that Americans could run. Running became the emblem of aerobic exercise, and the marathon was installed as the icon of success. Despite extraordinary individual achievements, however, the aerobics revolution did not succeed in getting our nation off its duff.

The aerobics doctrine inspired the few but discouraged the many. I was one of the lucky ones who discovered the benefits (and pleasures) of distance running. But I also was one of the guilty parties. On the basis of the data at hand and with the best of intentions, I proclaimed that the only way to benefit from exercise was to exercise aerobically. In many publications, both professional and popular, I wrote that golf was the perfect way to ruin a 4-mile walk -- but I was wrong.

The aerobics doctrine was based on sound studies that showed that aerobic training is required to build optimal aerobic fitness. Epidemiologic studies soon confirmed that fit people are healthy people, with a reduced risk for coronary artery disease, hypertension, stroke, and diabetes and a reduced mortality rate. These data remain valid today: Aerobic-intensity training is excellent for fitness and health.

#### **Health Benefits of Moderate Exercise**

Without contradicting the value of aerobics, new data show that it is possible to attain nearly all of the health benefits of exercise without attaining high levels of aerobic fitness. Moderate exercise is the way to do it. In this formulation, intensity is less important than the net amount of exercise, and intermittent exercise is as effective as

continuous activity. In fact, golf is very beneficial indeed, as long as players walk the course and play 2-3 times a week.

For most people, aerobic exercise is daunting. Moderate exercise should be much more appealing and accessible, but the message has not yet produced results. Part of the problem, I think, is the lingering belief that moderate exercise is a distant second-best to aerobics, that walking is a pale imitation of running. I suspect that when most people think of exercise, be they healthcare professionals or other folks, they hear the distant voice of their old coach barking, "No pain, no gain." For the 100-yd dash, your coach was right, but for achieving and maintaining health moderate, painless exercise is extraordinarily beneficial.

Although we don't have the advantage of randomized clinical trials that evaluate the effects of exercise on cardiac events and mortality in healthy people, 48 such trials have been conducted in patients with proven coronary artery disease. According to a meta-analysis of these studies, about half of the 8940 patients were randomly assigned to receive the best medical and surgical care available, whereas the others got the same standard of care plus enrollment in cardiac rehabilitation programs that were based on moderate exercise. The exercisers came out on top; in all, they enjoyed a 26% reduction in the risk for death from heart disease and a 20% reduction in the overall death rate. It's powerful evidence that exercise protects the heart -- and what's good for ailing hearts should be at least as beneficial for healthy ones.

If cardiovascular risk reduction was the only benefit of moderate exercise, it would still be vitally important for every physically able individual. But there are many other benefits. Exercise is an essential partner with diet for people who need to lose weight. And many observational studies also suggest that "no-sweat" exercise can help reduce the risk for stroke (by 21% to 34%), diabetes (16% to 50%), dementia (15% to 50%), fractures (40%), breast cancer (20% to 30%), and colon cancer (30% to 40%).

If that's not enough to get Americans moving, consider that exercise is also the only known way to slow the physiologic changes associated with the aging process in humans. None of these benefits require aerobic intensity; in science, as in the fable, the tortoise will do very nicely indeed.

A 2005 analysis of data from the famed Framingham Heart Study reports that people who exercise regularly enjoy 3.7 years of additional life expectancy as compared with sedentary individuals. An intensity equivalent to walking at a pace of 17 minutes per mile was sufficient. And another 2005 study showed that moderate exercise (walking 8.6 miles a week at 40% to 55% of maximum) will even increase the VO<sub>2</sub> max (although not to the same degree as aerobic training).

#### Cardiometabolic Exercise

One of the barriers to getting our patients moving is the academic distinction between exercise (defined as formal structured activity designed to promote fitness) and physical activity (defined as everything else). In our busy world, most people do not believe that they are able to set aside time for formal exercise, especially intense workouts. In fact, the

distinction is both arbitrary and misleading. Any physically active undertaking will contribute to health if it is part of an active lifestyle. Raking the lawn and cross-country skiing are at opposite poles of a single spectrum of benefit. For maximum protection, activities at the low end of the spectrum require more time than those at the high end, but they also are safer and less likely to produce injuries — and the health benefits are remarkably similar.

What should we call the broad spectrum of activities that contribute to health? The familiar terms (aerobic, anaerobic, endurance, isometric, and isotonic) are not quite right. That's why I've proposed the term cardiometabolic exercise (CME) to emphasize the health benefits of everything from moderate activity to aerobic training, from washing the car to hitting the elliptical. And the term is meant to emphasize that even at the low end of the spectrum, exercise has major benefits for the cardiovascular system (coronary artery disease, hypertension, stroke, arrhythmias, peripheral artery disease, etc) and metabolism (body fat, glucose homeostasis and insulin levels, lipids, etc).

Coining a term is one thing, but setting realistic goals is another. Health professionals have access to a rich literature that evaluates the intensity of exercise in units, such as metabolic equivalent, kilojoules, and kilocalories. But to help patients (and their healthcare providers) understand the relative value of various activities, I've translated these units of measurement into a simple CME point system and assigned the points to various recreational and daily activities.

The CME system should help people set realistic individual goals instead of wondering what to make of "guidelines" that call for 30-90 minutes of exercise a day. For general health and gradual weight loss, aim for 150 points a day or about 1000 points a week. For faster weight loss, reduce dietary calories more sharply and/or aim for 300 CME points a day.

The system encourages people to view physically active tasks as opportunities, not punishments. Climbing stairs instead of riding the elevator is but one example of a healthful choice that incorporates exercise into the fabric of daily life. We should encourage our patients to choose whatever activities work for them as long as they get enough exercise to maintain good health. As people experience the subjective benefits of moderate exercise, some will go on to aerobic training or sports participation.

People with medical problems or special needs require additional screening and supervision; guidelines are available for health professionals and the public.

CME is the key to exercise for health, and many people will get extra benefit by adding exercise for strength, flexibility, or balance at home for just a few minutes a day -- not necessarily at a gym under the watchful eye of a trainer. In addition, a prudent diet is an essential partner in the lifestyle prevention of many of the chronic illnesses that plague industrial societies.

Medical science continues to make astounding advances, but it has taken the collective effort of many dedicated

scientists to bring us back to the wisdom of Hippocrates: "If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health."

<http://tinyurl.com/plrn9g>



## CAN A LITTLE EXTRA WEIGHT PROTECT PEOPLE FROM EARLY DEATH?

### *Underweight, Extremely Obese Die Earlier Than People Of Normal Weight*

Underweight people and those who are extremely obese die earlier than people of normal weight—but those who are overweight actually live longer than people of normal weight. Those are the findings of a new study published online in Obesity by researchers at Statistics Canada, Kaiser Permanente Center for Health Research, Portland State University, Oregon Health & Science University, and McGill University.

"It's not surprising that extreme underweight and extreme obesity increase the risk of dying, but it is surprising that carrying a little extra weight may give people a longevity advantage," said David Feeny, PhD, coauthor of the study and senior investigator for the Kaiser Permanente Center for Health Research.

"It may be that a few extra pounds actually protect older people as their health declines, but that doesn't mean that people in the normal weight range should try to put on a few pounds," said Mark Kaplan, DrPH, coauthor and Professor of Community Health at Portland State University. "Our study only looked at mortality, not at quality of life, and there are many negative health consequences associated with obesity, including high blood pressure, high cholesterol, and diabetes."

"Good health is more than a BMI or a number on a scale. We know that people who choose a healthy lifestyle enjoy better health: good food choices, being physically active everyday, managing stress, and keeping blood pressure, cholesterol, and blood sugar levels in check," said Keith Bachman MD, a weight management specialist with Kaiser Permanente's Care Management Institute.

The study examined the relationship between body mass index and death among 11,326 adults in Canada over a 12-year period. (BMI uses height and weight to estimate body fat.) Researchers found that underweight people had the highest risk of dying, and the extremely obese had the second highest risk. Overweight people had a lower risk of dying than those of normal weight.

This is the first large Canadian study to show that people who are overweight may actually live longer than those of normal weight. An earlier study, conducted in the United States and published in 2005 in the Journal of the American Medical Association, showed similar results.

For this study, researchers used data from the National Population Health Survey conducted by Statistics Canada every two years. During the study period, from 1994/1995 through 2006/2007, underweight people were 70 percent more likely than people of normal weight to die, and extremely obese people were 36 percent more likely to die. But overweight individuals were 17 percent less likely to die. The relative risk for obese people

was nearly the same as for people of normal weight. The authors controlled for factors such as age, sex, physical activity, and smoking.

If you want to know more about health risks related to your weight and BMI, ask your doctor or get more information at: <http://kp.org/weight>.



## ACORN SQUASH AND APPLE SOUP

Acorn Squash has a slightly earthier taste than butternut squash, which complements the sweetness of the apple and mild spice of the curry powder. Enjoy this acorn squash and apple soup with some crusty whole-grain bread.

Cook Time: 40 minutes

### Ingredients:

- 1 Acorn Squash (about 1 1/2 pounds)
- 2 tsp canola oil
- 1 medium onion, finely chopped
- 1 large Granny Smith Apple, peeled, cored, and chopped into 1/2-inch pieces
- 2 tsp curry powder
- 2 cups fat-free, low-sodium chicken broth

### Preparation:

Pierce acorn squash with a fork, and place on a paper towel in the microwave for 8-10 minutes. Pierce with tip of knife to see if it's tender. Carefully remove from microwave. Allow to cool, then halve the acorn squash lengthwise. Scoop out seeds and fibers.

Meanwhile, heat oil in a medium pot or Dutch oven. Sauté onions and apples for 5 minutes, until softened. Sprinkle curry powder and stir well.

Scoop the flesh of the acorn squash from the skin and add to pot. Discard skin.

Pour in chicken or vegetable broth. Bring to a boil, then cover and simmer for 15 minutes.

Using a hand blender or a regular blender, puree the soup until smooth. Serves 4

Per Serving: Calories 145, Calories from Fat 2.8g (sat 0.2g), Cholesterol 0mg, Sodium 37mg, Fiber 4.3g, Protein 2.6g



## POST-SECOND AVE DELI MUSHROOM BARLEY SOUP

This is a very interesting recipe - you basically make soup twice - first a double broth, then removing these veggies, and making the soup itself with fresh veggies, cooking the meat even longer until it is succulent. It's even better the second day.

- 1 tbsp olive oil
- 1-1/2 lbs. top rib, (flanken, with bone)
- 2-3 cans beef, veggie and/or mushroom broth (I used both beef and veggie)
- Water to cover

1 onion, studded with two cloves  
 2 carrots, cut in thirds  
 1 large rib of celery, cut in thirds  
 2-3 sprigs fresh thyme  
 1 bay leaf

1 large onion, chopped  
 1 carrot, diced  
 1 rib celery, diced  
 ½ cup barley, rinsed  
 1-1/2 lbs. fresh mushrooms, chopped coarsely. (I used a combination of white and baby belles)  
 A few dried porcini or shitake mushrooms soaked in hot water for 20 minutes  
 Salt and pepper

Heat olive oil in a large soup pot. Lightly salt and pepper the top rib and brown it in the oil. Add broth and enough water to cover meat. Add cut onion, carrots, celery, thyme and bay leaf. Bring to a gentle boil and simmer until meat is almost tender (about an hour).

Remove the cooked vegetables and discard or use separately. Add diced carrot, celery, onion, barley, and salt and pepper. Simmer ½ hour. Add all mushrooms and the liquid in which the dried mushrooms were soaking (strain it first). Continue cooking about another ½ hour or until the meat is tender. If you have time, refrigerate overnight and remove the fat. (I just skimmed it after removing the veggies the first go round, and ate it that night. It was not too fatty.) Reheat and enjoy!

If soup is too thick, add water to correct consistency. For an extra special flavor add two marrow bones when you add the chopped vegetables.



## LENTIL SOUP

1 lb lentils  
 4 cloves fresh garlic, finely minced  
 2-3 stalks celery  
 2 large onions (Vidalia if available)  
 2 tablespoons olive oil  
 1/2 teaspoon black pepper  
 2 16 oz cans beef broth (or beef soup base)  
 1/4 teaspoon cayenne pepper  
 1 lb fresh spinach, washed, finely chopped  
 2 pork sausages (optional)  
 Parmesan cheese (for sprinkling)

If you want to add meat, before you begin, sauté a few broken up pork sausages in olive oil (Italian hot sausage is nice). Or for a change, add whole cheese rinds leftover from Pecorino Romano or Parmesan wheels.

You can use homemade beef stock, canned beef broth or reconstituted beef soup base (your preference). Water will do in a pinch, but will lack the good flavor that broth will contribute.

Note: If available, beef bones or a large ham bone or homemade stock may be used in place of the canned beef broth or soup base.

To the broth (in the same pan), add minced fresh garlic to your taste, chopped sweet onions (1 or 2 large), finely minced (strings removed) celery and crushed red or black pepper (a pinch of cayenne if you like it).

Cook lentils in beef stock in a pressure cooker, or you can do this over the stove; it will just take longer. In a pressure cooker, this will take 20-30 minutes depending on how dry/old the lentils are to begin with. Be sure that you add enough water/broth to the pressure cooker at the start; at least 3-4 inches above the top of the beans.

If cooking on the stovetop, add broth as required and cook until lentils are tender, 1-2 hours over low heat (barely a simmer). During the last 10 minutes or so, (when the lentils are tender) bring to a high simmer and add about 1 lb finely chopped well washed fresh spinach. If using baby spinach, cook only 5 minutes (in the same pan as the soup).

Crush a few tablespoons of the lentils into a paste with the back of a spoon if the soup needs thickening.

Remove from heat and adjust seasoning, adding olive oil, salt, pepper, a sprinkling of onion and/or garlic powder and pinch of hot cayenne pepper if it needs a kick.

Serve garnished with a generous sprinkling of freshly grated Parmesan cheese. <http://www.cooks.com>



## OVEN FRIED CHICKEN

2 tbsp. nonfat milk  
 2 large egg whites  
 1/4 c. all-purpose flour  
 1/4 tsp. each dry mustard, garlic powder & pepper  
 ½ tsp. minced dried onions  
 ½ tsp. paprika  
 Whole chicken breasts, split, skin removed  
 2 c. panko or plain bread crumbs  
 1 tsp. salt-free seasoning blend  
 1 tsp. safflower oil

NOTE: Panko is Japanese style bread crumbs. It can usually be found in the ethnic foods section of the supermarket. Look for a brand that is made without oil or shortening. Ordinary bread crumbs may be used, but again, check the label for fats.

Preheat oven to 425 degrees. In a shallow bowl, combine egg whites and milk; set aside. In a paper bag, combine flour, dry mustard, garlic powder, pepper, dried onions and paprika.

In another paper bag, combine panko or bread crumbs and salt free seasoning blend. Place chicken in bag with flour and shake to coat; remove and dip in egg mixture.

Place chicken in second bag and shake to coat with crumbs. Brush oil on a nonstick baking pan; add chicken and bake 20 minutes. Turn and bake 20-30 minutes or until chicken is tender and crisp.

<http://www.cooks.com>

Information in this newsletter is for educational purposes only. Always consult with your doctor first about your specific condition, treatment options and other health concerns you may have.



**"We don't have to anesthetize patients anymore. I just walk in with this and they pass out in a second."**

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