COMPLIMENTARY ISSUE

# Something More *for you*

THE OSTEOPATHIC PATIENT

VOL. 8, ISSUE 1, 2006

## Are you at risk for Metabolic Syndrome?

## A Growing Threat: Antibiotic Resistance

**Eye Care for Children**

**Caffeine Basics**

**Web Medicine: Surf Smart**

*David Capaccio, DO is an internist in private practice*

# Tucson Osteopathic Medical Foundation

The Tucson Osteopathic Medical Foundation's mission in serving the seven counties of southern Arizona is to advance osteopathic medical education, to improve the public's understanding of osteopathic medicine, and to elevate through education the health and well-being of the community. In so doing, the Foundation has established itself as an innovative contributor to the development of a wide range of community projects, which impact the lives of many.

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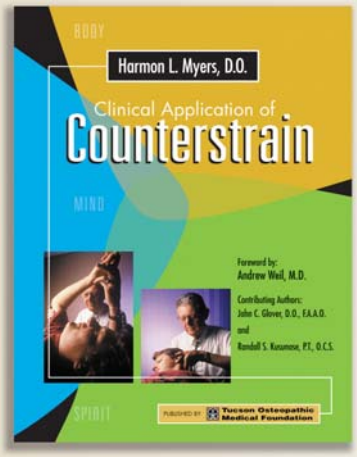


### Clinical Application of Counterstrain

**by Harmon L. Myers, DO**

With genuine delight and pride, the Tucson Osteopathic Medical Foundation announces its publication by one of their own—Harmon L. Myers, DO—Clinical Application of Counterstrain.

Designed to be a hands-on reference, Dr. Myers' book features more than 200 treatment photos and medical illustrations, all in full color. Color-coded chapters in top–to–toe presentation enhance a concise and consistent text format. A foreword by Andrew Weil, MD, an introduction by John C. Glover, DO, a section on TMJ by contributing author Randall Kusunose, PT, and unfailing encouragement from William Devine, DO, combine, in this new work, to document and support Dr. Myer's lifelong approach to osteopathic manipulative treatment (OMT).

OMT offers a noninvasive method to circumvent the need for drugs and surgery in order to relieve pain, restore function, and maximize the body's natural inclination towards health. Dr. Myers is a national authority and teacher of the counterstrain method of OMT. He has been teaching courses for 20 years in Counterstrain method and since 1997 has been a preceptor for the program in Integrative Medicine at the University of Arizona.

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This publication presents general information and is not intended as medical advice. Medical advice should be obtained from your own personal physician.


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# Eye

# Care for Children

By Janni Lee Simner

When it comes to caring for young eyes, the biggest challenge isn't how to treat vision problems—it's how to figure out something's wrong in the first place.

"Younger children don't have the words to say there's a problem," explains pediatric ophthalmologist Joseph Miller, MD, MPH. Children also don't have the life experience to know when their eyes aren't working as well as they used to.

That means that the adults around them need to be on the lookout for problems. Most professionals recommend children's eyes be examined starting at age three; many also recommend a preliminary screening at six months. While some recommend those exams be performed by an ophthalmologist or optometrist, others—including Miller—say that school nurses, pediatricians, public health nurses, local health clinics, and others are also qualified to conduct screenings. Miller recommends these screenings take place in each child's "medical home"—that is, wherever he or she already goes for routine care. If a potential problem is detected, the child can be referred to a specialist for a more in-depth evaluation.

*Often, parents detect nearsightedness when they're driving somewhere and realize their child can't read the road signs.*

Parents play as important a role as professionals, though, especially between screenings; they know what's "normal" for their child, and so are likely to notice when something isn't right. "We're very sensitive to what Mom and Dad tell us," says ophthalmologist Whitney Lynch, DO. "Frequently parents will be the first ones to pick up potential problems such as crossed eyes, or vision problems, or any number of things."

## Looking Out for Young Eyes

But what, exactly, should parents look out for?

Children who complain of headaches, or who squint when looking into the distance, might be nearsighted—that is, their eyes might have trouble focusing on and seeing far-off objects. Nearsighted children sometimes have trouble reading blackboards, and tend to sit close to the television or hold books near their eyes while reading. Often, Miller says, parents detect nearsightedness when they're driving somewhere and realize their child can't read the road signs.

Treating nearsightedness is pretty straightforward: children simply wear glasses to bring distant objects back into focus. While some people worry that wearing glasses might make the wearer dependent on them, according to the National Institutes of Health (NIH), glasses don't harm eyesight in any way—and neither does reading or watching TV. "Glasses actually allow the child's eyes to relax," Lynch says, "decreasing fatigue with regular use, as well as providing protection from thrown objects."

Children who have aching eyes, headaches while reading, or crossed eyes might be farsighted. (Crossed eyes can also indicate other problems.) Farsighted children may focus on distant objects just fine, but find that near ones are blurry. Again, treatment usually means getting glasses. According to the NIH, most children—unlike most adults—eventually outgrow farsightedness.

Astigmatism occurs when the shape of the eye is distorted and not quite spherical. This causes the fine details of vision to blur—something that glasses can compensate for. There aren't many outward signs of astigmatism; it's more likely to be detected during an eye exam.

*Glasses don't harm eyesight in any way—and neither does reading or watching TV*

Nearsightedness, farsightedness, and astigmatism can be corrected at any time, but the NIH points out that early detection and treatment may help children avoid the learning and social difficulties that can go with poor vision.

For children with amblyopia—more commonly known as "lazy eye"—early detection is far more critical. Lazy eye occurs when one eye does most of the work of seeing on its own, while the other eye fails to develop properly alongside it. Treated early enough the weaker eye can regain normal vision; but by the time the child is through growing, the eyes are through growing, too, and treatment is no longer possible. How early is early enough is subject to some debate; adolescence was once considered too late, but now there's evidence that some improvement might be possible through to age seventeen.

Still, the prognosis is better the sooner treatment begins. That treatment generally involves either wearing an eye patch to block the stronger eye, or using eye drops to temporarily weaken it—both strategies that force the "lazy" eye to work harder and develop more fully.

Nearsightedness, farsightedness, and astigmatism can all lead to lazy eye—if they are much more severe in one eye than the other. When this happens, the glasses that help the weaker eye focus will help treat the amblyopia as well. Those glasses also protect the stronger eye—which is important because, as Miller explains, one's good eye is more likely to be injured in an accident, precisely because the child favors it.

Eyes that cross can also lead to lazy eye. Miller urges parents to never assume a child with crossed eyes will grow out of it. "It's never normal for a child's eyes to cross inward," Miller says. An eye drifting outward is less of a concern; this happens to three out of four infants during their first six months. Children with crossed eyes or otherwise misaligned eyes, however, should consult with a medical professional as soon as possible.

While lazy eye, misaligned eyes, and trouble focusing are by far the most common vision problems most children face, there are some other, less common problems parents should also watch out for. Red, cloudy, or tearing eyes could indicate infection or obstruction of the tear ducts. Droopy eyelids could mean the brain isn't stimulating the eye properly. Funny or tilted head postures could be an unconscious attempt to avoid having crossed eyes. Pupils that are different sizes could indicate rare but potentially serious eye tumors, and whiteness in the pupil could indicate cataracts, tumors, or cornea defects. In all these cases, the child should be evaluated immediately.

But even if your child displays none of the above symptoms, Miller says, "If you suspect something doesn't look right, trust your instincts and get the child seen."

## Glasses and Beyond

In Arizona, children are routinely given shatterproof polycarbonate lenses—an important safety measure no matter what their specific vision problems. Miller says most children who wear glasses take to them pretty well, because seeing better reduces the stress in their lives—at least until adolescence, when heightened peer pressure kicks in.

Miller adds that whether to switch to contact lenses is "more of a parental decision than a medical decision," and advises parents to think hard about whether their children are up for the responsibility of contacts. "Look at your kid's room," he suggests. "If they're a fairly neat kid, they'll probably do better."

*"If you suspect something doesn't look right, trust your instincts and get the child seen."*

By the time most children are teens, their eyes have fully developed and are not very different from adult eyes. At any age, though, Miller says the most important thing is to seek out care when needed, whether that means visiting one's medical home or seeing a specialist.

"We're fortunate to have a good community of ophthalmologists and optometrists in Tucson," Miller says. "We should take advantage of that." ❖

# Health News Notes

## Artery-Clogging Air

High fat diets and polluted air are both associated with the buildup of arterial plaques that can lead to heart disease—and the two together may do more damage than either alone, according to the *Journal of the American Medical Association*.

## Seasonal Diabetes

Your chances of developing diabetes may depend on…the season. Type 2 diabetes is most likely to be diagnosed in March and least likely to be diagnosed in August, according to *Diabetes Care*. Previous research suggests that March and April are also the months diagnosed diabetics have the most trouble controlling their blood sugar.

# Are you at risk for Metabolic Syndrome?

**Poor eating habits and a sedentary lifestyle are the most common causes of most cases of metabolic syndrome.**

**By Mark Flint**

As medical conditions go, metabolic syndrome hasn't exactly reached media darling status.

You can't buy colored wristbands to help fund research for it, and you won't see celebrities wearing colored ribbons to increase awareness.

For a condition that affects an estimated one in five adults in the United States—and half of the elderly—more awareness might be a good idea.

The name itself doesn't particularly engender recognition, and the fact that it can go by several other monikers doesn't help. Metabolic syndrome is also known as syndrome X, but may be called dysmetabolic syndrome, insulin resistance syndrome, obesity syndrome or Reaven's syndrome.

Search the word "syndrome" on the Columbia Encyclopedia online and you will get a list of thirteen diseases. Not one of them is metabolic syndrome or one of its aliases.

Whatever you choose to call it, getting to know more about metabolic syndrome may be well worth the effort. Chances are you or someone you know has or will have it.

A syndrome is a group of symptoms that collectively indicate a disease. In the case of metabolic syndrome, some of those symptoms may be diseases in their own right.

Metabolic syndrome is defined as a set of risk factors that includes abdominal obesity, a decreased ability to process glucose (insulin resistance), dyslipidemia (unhealthy lipid levels), and hypertension. Patients with metabolic syndrome have an increased risk of developing cardiovascular disease and/or type 2 diabetes.

It can affect anyone at any age, but metabolic syndrome is most frequently found in people who are significantly overweight (with most of their excess fat in the abdominal area) and inactive.

## Doctors know it well

Ever since 1998, when the World Health Organization published a definition of the syndrome that gained international acceptance, doctors have been including it in their examinations, particularly for patients who may be at higher risk.

"Doctors are becoming increasingly aware of metabolic syndrome," noted Dr. David Capaccio, a Tucson osteopathic physician. "Most have known about it for at least a decade, when it became accepted as a true syndrome."

Capaccio said that public awareness of the syndrome has increased, but more needs to be done.

## Prevention is the best cure

While there are genetic risk factors, metabolic syndrome is primarily caused by lifestyle, and can be controlled or prevented by making healthy choices.

Poor eating habits and a sedentary lifestyle are the most common causes of most cases of metabolic syndrome. Some cases are found in patients who have been diagnosed with hypertension and also in people who have poorly controlled diabetes. Genetic factors that are still being researched may also play a role.

"Becoming aware and trying to adopt a healthy lifestyle is the trick," Capaccio said. "Most cases can be treated with weight reduction, exercise and better nutrition."

# Health News Notes

## Spousal Stresses

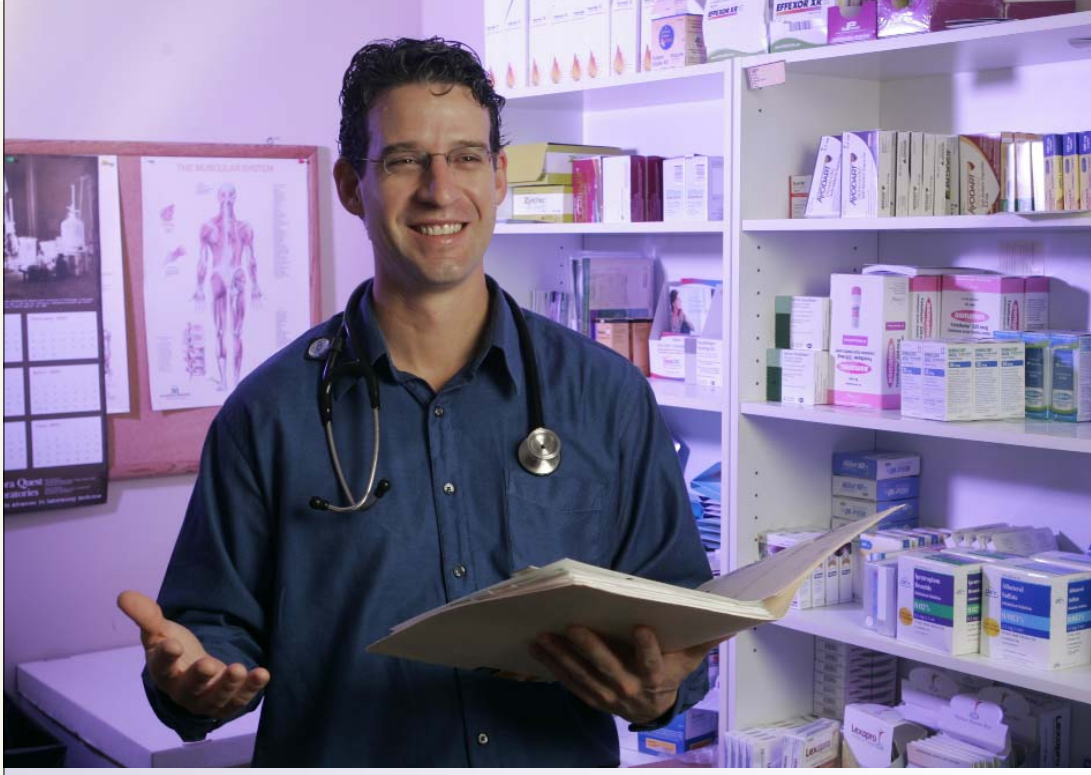
Serious illnesses may take a double toll—the partners of ailing elderly hospital patients have an above-average death rate, according to the *New England Journal of Medicine*.

## Wakeful Sleep

Feel like you didn't sleep a wink last night, even though your eyes were closed? You may have been sleeping and not–sleeping at the same time. In fitfully sleeping rats, brain areas associated with wakefulness and sleep were active at the same time, according to Harvard Medical School researchers.

## Musical Sleep

If sleep apnea is causing your troubled sleep, it may be time for a new musical habit. Those who learned to play the didgeridoo, an aboriginal wind instrument, experienced drops in sleep apnea and daytime sleepiness, according to the *British Medical Journal*—at least so long as they practiced every day.



Failure to make those changes, he added, can result in significant health problems.

"If metabolic syndrome is ignored, the patient has increased risk of cardiovascular disease, weight-associated arthritis at the knee and hip, and sleep apnea, which can cause an increase in sudden cardiac death," Capaccio said. "It could also lead to the onset of diabetes."

Diabetes can lead to a host of long-term complications—among them are heart attacks, strokes, blindness, kidney failure, blood vessel disease that requires an amputation, nerve damage, and impotence in men.

Treating metabolic syndrome is most effective if it is caught early, before symptoms manifest themselves, Capaccio noted—and this must be done through testing.

"Very early on there are no symptoms," he said. "You don't feel any different. You're not going to feel your lipids, nor will you notice slightly elevated glucose. And most people don't know they have high blood pressure.

A routine annual physical would pick up "virtually all of the metabolic syndrome indicators," he said.

There are some indicators for people who may be more at risk to have metabolic syndrome. The genetic component indicates that family history is one indicator. African Americans are more likely to be at risk, and it is more frequent in women than in men.

Getting a regular physical exam—every other year before age 40 if you are healthy and don't have risk factors for metabolic syndrome or other disease, and every year after age 40—is one way to make sure this syndrome doesn't sneak up on you.

Exercise, avoiding use of tobacco, moderate use of alcohol, a healthy diet and controlling your weight will help keep metabolic syndrome in check, with the added benefit of helping prevent other serious medical problems, such as heart disease and some types of cancer.

*"Doctors are becoming increasingly aware of metabolic syndrome," noted Dr. David Capaccio, a Tucson osteopathic physician. "Most have known about it for at least a decade, when it became accepted as a true syndrome." Capaccio said that public awareness of the syndrome has increased, but more needs to be done.*

DAVID SANDERS

## Not a perfect fit

While there is general agreement in the medical community that metabolic syndrome is real, the condition is not free of controversy.

"With a syndrome you are talking about multiple disease entities that are grouped into one diagnosis," Capaccio said, and this has the potential for overlooking the significance of the individual diseases.

Organizations that promote awareness of these diseases, and seek funds for additional research, emphasize that the individual diseases that are a component of metabolic syndrome are also "stand alone" diseases.

"The American Diabetic Association didn't want physicians to lose sight that diabetes by itself is an ailment," said Capaccio, who added that the association makes a valid argument. "They don't want a diagnosis missed because somebody doesn't fit the classic profile. Certainly we have many skinny adults who have diabetes."

Other components of the syndrome, such as high cholesterol and high blood pressure, are often singular conditions.

**For a condition that affects an estimated one in five adults in the United States—and half of the elderly—more awareness might be a good idea.**

Whether singly or in concert, the diseases that make up metabolic syndrome can be diagnosed through routine physicals, and prevention and treatment are the same.

The bottom line is that we can do ourselves and our loved ones a huge favor by leading a healthy lifestyle, one that incorporates sound nutrition, exercise, weight control, moderate consumption of alcohol and avoiding the use of tobacco.

Being able to name a disease is important, but the most critical piece of information is knowing that we can prevent it by making lifestyle choices that have the added benefit of making us feel better. ❖

## Metabolic syndrome defined

The most commonly accepted definition of metabolic syndrome uses criteria proposed as part of ATP III (the third report of the National Cholesterol Education Program expert panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults). According to Lab Tests Online, ATP III defines metabolic syndrome as involving three or more of the following:

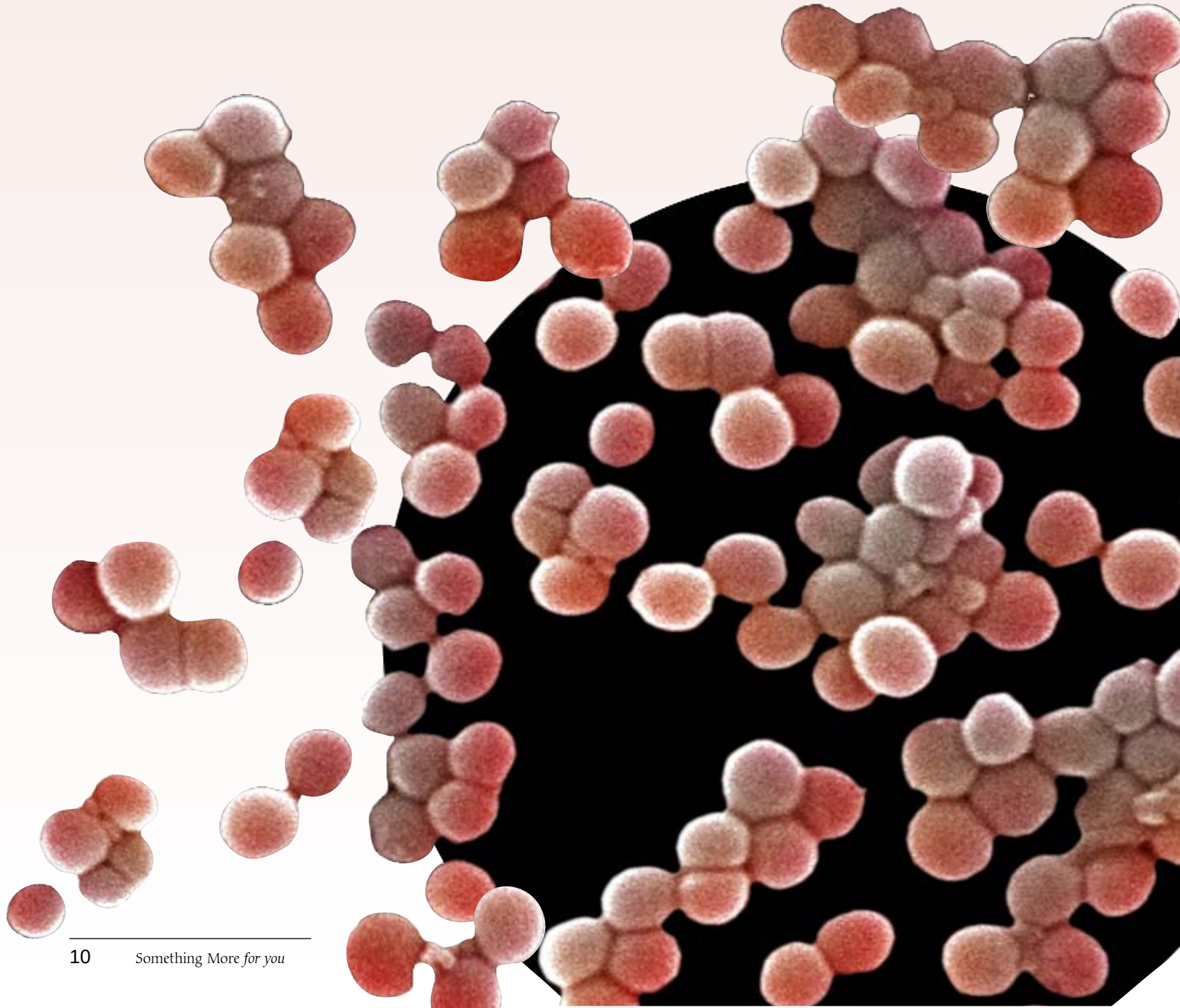
- Central/abdominal obesity as measured by waist circumference. In men, this is defined as a circumference greater than 40 inches (102 cm); in women the minimum is 35 inches (88 cm).
- Fasting triglycerides greater than or equal to 150 mg/dL
- HDL cholesterol of less than 40 mg/dL in men and less than 50 mg/dL in women
- Blood pressure greater than or equal to 130/85
- Fasting glucose greater than or equal to 110 mg/dL (6.1 mmol/L)

"Also frequently seen with metabolic syndrome but not included with the ATP III criteria are prothrombotic (blood clotting) and proinflammatory tendencies," notes the website. "While these combined criteria and risk factors do not usually cause overt symptoms, they are a warning of an increased likelihood of clogged arteries, heart disease, stroke, diabetes, kidney disease, and even premature death."

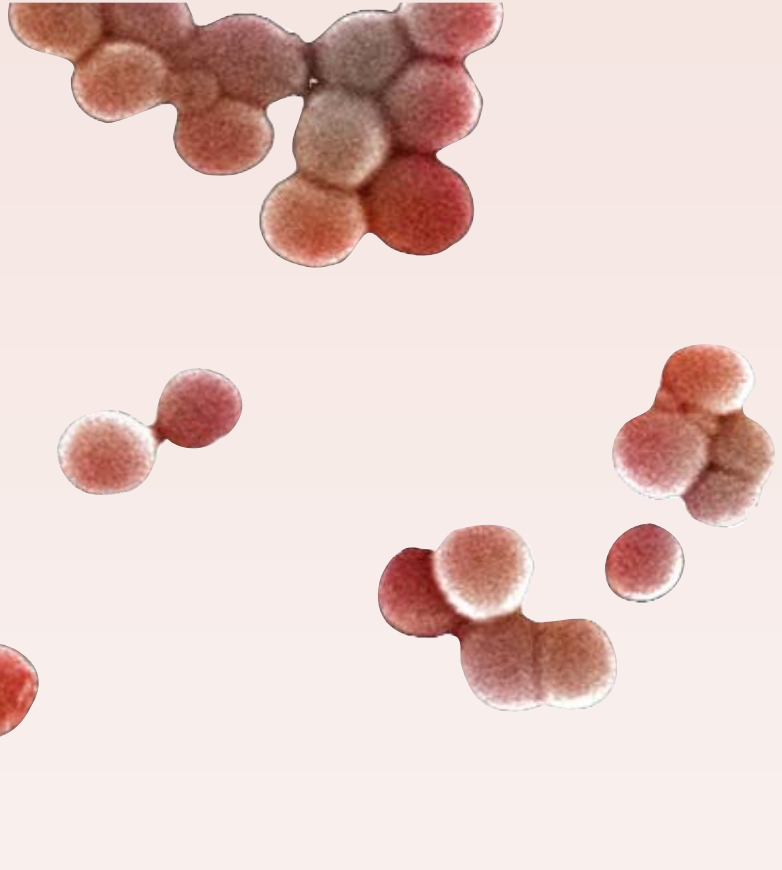
# A Growing Threat:

# Antibiotic Resistance

by Karen Wood



**Steve Latham is trying to forget the year he spent battling methicillin-resistant staphylococcus aureus (MRSA). He probably won't succeed. It was too traumatic, too painful and too frustrating and frankly, the scare went too deep. You don't forget the words "incurable disease," "don't give up just yet," and "I don't know what else to try." Especially when you have no assurance that it won't happen again.**



*methicillin-resistant staphylococcus aureus (MRSA)* © CDC/Science Source

An insurance agent, Latham says that his year of living with MRSA very nearly destroyed his health and almost cost him his job. It certainly ravaged his peace of mind. He tried many different antibiotics, made multiple visits to urgent care and emergency rooms, logged weeks of hospital time, and visited specialist after specialist. His particular strain of infection, encouraged by the fertile breeding ground of Latham's eczema-wracked skin, recurred again and again. Even vancomycin, long considered the big gun for resistant staph infections, failed to subdue the painful lesions popping up on Latham's body. Multiple courses of a newer drug, linezolid, which costs about $100 per day, also failed to keep the outbreaks at bay.

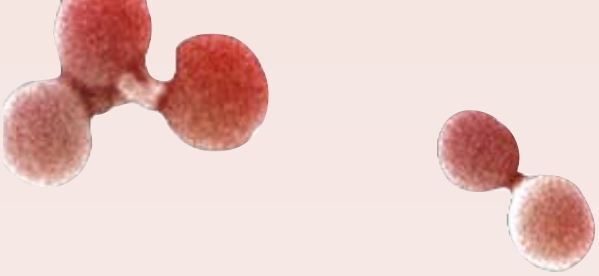
Because Latham has eczema, he is an especially challenging case, a "nightmare" for infectious disease specialists. Whereas some 50 percent of the general public is colonized with the common microbe staph aureus, 75–100 percent of eczema patients carry it on their skin and in their nasal passages. Usually, staph doesn't cause a problem. But when it enters the skin, it can cause painful, pus-filled lesions. Because eczema causes cracks in the skin, sufferers of the disorder are especially susceptible to staph infections. And if staph finds its way into the bloodstream, heart, joints, bones, or lungs, patients can die, their immune systems overwhelmed by virulent toxins unchecked by antibiotics.

What started out as a suspected spider bite for Steve Latham turned into a 12-month search for a cure for a condition that unfortunately, may be incurable. While people with eczema are more susceptible to staph infections, the problem of drug-resistant infections affects everyone. It could happen to you and here's why.

## A brief history of the microbe battle

Spurred by WWII, penicillin came into general use in the 1940s, greatly reducing the death rates of diseases like tuberculosis, pneumonia, meningitis, and typhoid fever. Soldiers routinely died of wound infections in the wars before antibiotics came into being. Many of us can't remember when antibiotics didn't exist. Think of the complications that a scratch from your cat or a bite from the neighbors' dog could cause without antibiotics. A common urinary tract infection might morph into a kidney infection and cause serious illness or death. A sinus infection, a puncture from a rusty nail—both could be serious, if not deadly, without the antibiotics we take for granted.

And these days, we treat antibiotics so casually that we are compromising their ability to heal. A whopping 70 percent of the bacteria that cause infections in hospitals are resistant





to at least one of the drugs most commonly used against them. "We're seeing antibiotic resistance in pretty much any bacteria that we know about," says Dr. Sean Elliott, a specialist in pediatric infectious diseases. Part of the reason is overuse. Tens of millions of antibiotic prescriptions are written for ailments they cannot cure. For example, any illness caused by a virus cannot be healed by an antibiotic. That includes colds, the flu, and many sinus infections, sore throats, ear infections, and cases of bronchitis.

## When antibiotics are dangerous

When you pull out the heavy artillery for something that only needs Kleenex, bed rest, and chicken soup, the consequences are more serious than a simple waste of medicine. There are very good reasons why antibiotics shouldn't be taken when they're not needed. Most importantly, antibiotics taken routinely lose their effectiveness. It's a simple matter of bacterial evolution. To survive, bacteria learn to outwit the antibiotic arsenal we aim at them. In general, antibiotics work either by destroying a bacterium's cell wall or interfering with its ability to reproduce. Viruses don't have cell walls, which is one reason antibiotics don't work against them.

When you take an antibiotic, either appropriately or inappropriately, you're changing the bacterial mix inside your body. The good bacteria, the ones that live normally in your intestinal tract, may get picked off by the antibiotic equivalent of friendly fire. And the harmful, pathogenic, make-you-sick bacteria respond to the pressure of having a germicidal gun to their heads. They mutate.

**What started out as a suspected spider bite for Steve Latham turned into a 12–month search for a cure for a condition that, unfortunately, may be incurable.**

Sometimes they have bacterial sex; exchanging genes with other bacteria in the body, perhaps picking up a gene that will help them survive. Or when a bacterium reproduces, something goes awry and the copy is slightly different from its parent. It may be changed enough that an antibiotic that used to be deadly is no longer effective. "We're a victim of our own success," says Elliott, an associate professor of clinical pediatrics at the University of Arizona Health Sciences Center. "Unfortunately, we're messing with nature and nature, as anybody can tell, is very good at adapting."

Indiscriminate use of antibiotics may just clear the playing field for the bad actors. "If we're treating and killing the normal bacteria with an antibiotic used inappropriately, this mutant has no competition for survival and it becomes the dominant strain," explains Elliott.

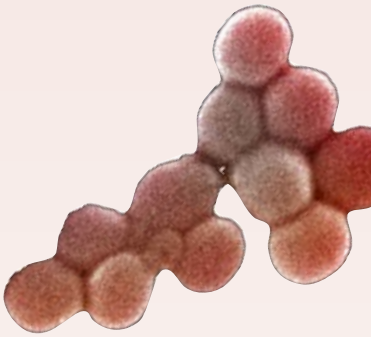
In order to minimize the downside of taking antibiotics (killing off the helpful bacteria), it is important to take the right antibiotic for your particular ailment and to take it as prescribed. Let's say that you have come down with food poisoning from eating at a restaurant whose employees are lax about hand-washing. You are infected with the E. coli bacteria and you are miserable. If your doctor prescribes an antibiotic, be sure to finish all of the pills. If you stop too soon, perhaps because your symptoms are gone, all of the bacteria may not be eliminated. Remember the adage "what doesn't kill you makes you stronger." Bacteria live by that credo.

## It's in your food

Adding to the problem of overuse is the practice of adding antibiotics to animal feed. According to the World Health Organization, almost half of the antibiotics produced globally are used in food animals. The drugs are used to cure sick animals and also to increase growth. Through the animals, we get antibiotics passed into our food supply and the environment. And because liberal use of antibiotics leads to resistant bacterial strains, treating animals increases the amount of drugs circulating through society.

Those who work with animals are especially at risk. "If you happen to live on a farm, you're exposed to E. coli, Campylobacter and Salmonella that have been exposed to a lot of antibiotics," says David Nix, PharmD, professor of pharmacy and medicine at the University of Arizona College of Pharmacy. "You could get an infection that was highly resistant to the normal antibiotics." To lessen that chance, the government works to ban animal use of antibiotics that are also used in humans. "Other countries, particularly in Europe, Nix says, do not use antibiotics for growth promotion.

*A microscopic view of Vancomycin, the gold standard in antibiotics*



## The downside of evolution

So, after decades of antibiotic use and the development of many different classes of antibiotics, the balance of power is shifting. Some strains of bacteria are now resistant to multiple antibiotics (as in Steve Latham's case of MRSA) and the pace seems to be accelerating. The gold standard, vancomycin, used effectively for years, has finally spawned some resistant strains. There aren't many cases of vancomycin-resistant bacteria, but that there are any at all is alarming. Some of the newer antibiotics have shown resistance issues after only a year of use. "It's something that should be a wake-up call to tell us what to do in terms of controlling usage and in developing new drugs," says Nix.

> "We're a victim of our own success. Unfortunately, we're messing with nature and nature, as anybody can tell, is very good at adapting."

Trying to find a drug that will stop a particular infection is forcing doctors to resort to antibiotics that are more toxic to the body and thus harder to tolerate. Certain classes of drugs can cause nausea, vomiting, or joint pain. More seriously, some can cause kidney damage.

Although only a small percentage of patients may be affected, if you are one of those, it limits the drugs you can take comfortably.

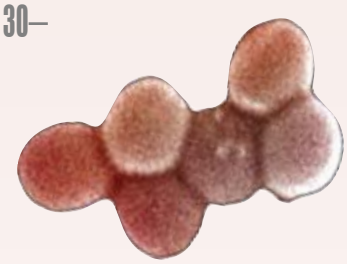
## The wake-up call

Alarmed by the spread of drug-resistant strains like MRSA which has moved from infecting patients already ill from other diseases to infecting young, healthy adults, the medical community is taking action. Guidelines for antibiotic use in children now call for "judicious" use. For example, otitis media (middle ear infection) often resolves without antibiotics. So in cases that meet a certain criteria, physicians give what they call a "lifeboat prescription." If the earache doesn't resolve in a few days, the parents fill the prescription.

As the bacteria mutate to survive, what is needed are new drugs. The Infectious Diseases Society of America, a physicians' group, is lobbying for initiatives that would encourage antibiotic development. Bringing a new drug to market can take as long as 10 years and

## Take as directed

- Only use antibiotics if prescribed and recommended by your physician.
- Take antibiotics exactly as prescribed, as many times per day, and as many days as directed.
- Don't demand antibiotics if your doctor says they will not cure your illness.
- If you have medicine left over at the end of treatment, or because your doctor stops it early, throw away the remaining pills. Don't save them for a rainy day.
- Maintain a healthy body by washing your hands vigorously several times per day, eating a balanced diet, and drinking 8–10 glasses of water a day.
- Don't use antibiotic soaps—because they tend to be harsh and drying, they are more likely to cause cracks in the skin through which microbes can enter. In any case, Elliott says that 30–40 percent of bacteria have become resistant to the specific chemical used in the soaps.



between $800 million to $1.7 billion dollars. "A lot of the larger pharmaceutical companies shut down their development of new antibiotics, because they consider it less profitable than other areas," says Nix. A pharmaceutical company may be better served financially by concentrating on drugs for depression, high blood pressure, cholesterol, or gastric reflux—medicines for chronic conditions which may be taken for many years. "If we get a brand new agent that covers a particular problem, we want to keep it for that use." says Nix. "We want to reserve that until we need it and that hurts a drug company's bottom line."

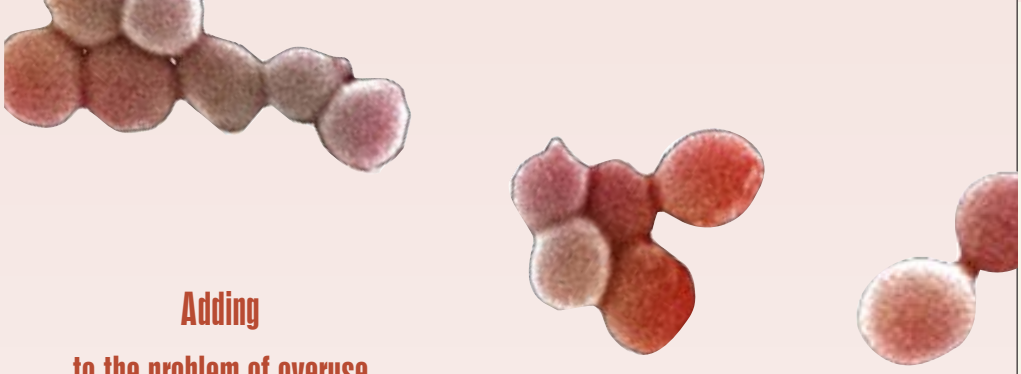
> "The very scary reality is that bacterial antibiotic resistance development can and probably will at some point outstrip the ability of medical science to come up with effective antibiotics."

Now under consideration is a House bill that recommends incentives for research and development related to infectious diseases including patent extensions, tax credits, accelerated approvals, and grants for clinical trials. By the end of 2006, a commission of industry leaders, researchers, and government agencies is charged with identifying pathogens that are or are likely to become significant threats to public health.

### Hit list for bad bacteria

According to the Infectious Diseases Society of America, we have few drugs to combat the following microbes:

- Methicillin-resistant staphylococcus aureus (MRSA), a common bacterium that can cause life-threatening illnesses including pneumonia, bone infections, endocarditis, and meningitis
- Escherichia coli and Klebsiella, bacteria that commonly cause urinary and intestinal tract infections
- Acinetobacter baumannii, which causes hospital-acquired pneumonia and wound infections among U.S. soldiers
- Aspergillus, a type of fungus that causes allergies and different types of infections; can be life-threatening in people with compromised immune systems
- Vancomycin-resistant enterococcus faecium (VRE), which causes meningitis and abdominal, urinary tract, wound, and bloodstream infections
- Pseudomonas aeruginosa, which causes severe pneumonia, and urinary tract, gastrointestinal and systemic infections, especially in patients who have cancer, burns, cystic fibrosis, AIDS or impaired immune systems



**Adding to the problem of overuse is the practice of adding antibiotics to animal feed… almost half of the antibiotics produced globally are used in food animals.**

"It is quite plausible that at a point 5–10–15 years from now, we will get a bacteria that we have no medications to treat," says Elliott. "We've already had near misses in the last two years. For a period of several weeks or months, there were no licensed approved drugs that could treat VRSA (vancomycin-resistant staphylococcus aureus)."

### What you can do to protect yourself

The best course would be not to need an antibiotic. That's obviously not always possible, but there are things you can do to lessen your exposure to infective agents: be careful what you eat and drink, especially in developing countries. Store and cook food appropriately, wash your hands frequently, don't share combs or clothes, and keep wounds covered.

And strive to be healthy. Eat a balanced diet and drink plenty of water. "A dehydrated body is an at-risk body for urinary tract infections and the common cold," says Elliott. "The immune system needs a healthy body." Too much sugar, fat, and cholesterol hinder the immune system's effectiveness. "I strongly urge people to think about general levels of health in addition to using antibiotics appropriately," Elliott says. "Too much caffeine, too little sleep, too much sugar, too much alcohol—all of these things will suppress and influence the immune system."

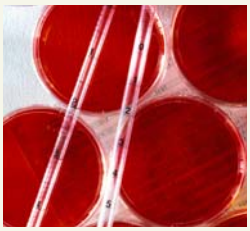
### The end of the story

Back to Steve Latham, who lost a year of his life to methicillin-resistant staphylococcus aureus. After consulting several local infectious disease specialists, traveling to the Mayo Clinic twice, trying to talk his way into clinical trials in nearby states, and contemplating trips to Germany, Japan and Australia to try new treatments, he is finally free of outbreaks. After a tip from a friend in the pharmaceutical industry, he tracked down a new drug and, after months of searching, found a physician who would prescribe it for him. Although his experience is now a year behind him, Latham still feels its effects. "It wrecked my system," he says. "I'm not the same person." And for someone who had been athletic and basically healthy, it was a terrifying glimpse of the limits of medical science. "It had become a hopeless situation," Latham says. "I really felt I could have died." And there is the specter of reinfection. "Prevention is key, but how do you prevent this?" he says. "I can't afford to go through this again."

Society as a whole can't afford it either. At this point, the options are: making a greater effort to use antibiotics appropriately; cutting back on antibiotic use, both in humans and animals; and developing new drugs or new ways of delivering drugs that will keep us a step ahead of our one-celled opponents. "The very scary reality is that bacterial antibiotic resistance development can and probably will at some point outstrip the ability of medical science to come up with effective antibiotics," says Elliott. "When that happens, we will not be able to treat our infections and we will have a huge degree of patient death." ❖

# Health News Notes

## Growing New Blood Vessels



Replacing damaged blood vessels may one day be a matter of simply growing new ones. Researchers at Cytograft Tissue Engineering have successfully created new blood vessels for two dialysis patients. They did so by starting with cells from the patients' own skin, growing those cells into sheets, rolling the sheets into tubes, and seeding the tubes with blood vessel cells. The researchers hope to eventually use the technique for heart patients as well.

## Protective Pregnancy

Femara, a lab-made version of a protein produced during pregnancy, is effective against breast cancer—as effective as the drug Tamoxifen, according to Albany Medical College researchers.

## Abdominal Chemo

Delivering chemotherapy directly to the abdomen may improve survival rates for women with stage III ovarian cancer, according to the *New England Journal of Medicine*.

Whether you reach for a morning cup of coffee, stop for an espresso on the way to work, or grab a mid-afternoon Coke from a vending machine, chances are you'll get a caffeine lift sometime today.

You won't be alone. Nearly 90 percent of all adults share the caffeine habit, according to the Journal of the American Dietetic Association. Given the number of places this energy-booster can be found—not only in coffee, tea, and soda, but also in chocolate, pain medication, and straight-up caffeine tablets—the only surprise may be that this number isn't higher.

## How Much Is Too Much?

Most experts don't see caffeine consumption as a cause for alarm, at least not in moderation. The National Institutes of Health (NIH) and the Mayo Clinic agree that 200 to 300 mg a day isn't harmful, at least for those without mitigating medical conditions.

That's two or three eight–ounce cups of coffee a day, depending on the blend and how you brew it. (Unless you get your coffee from Starbucks, which packs 250 mg into a single eight ounce—or short—serving.) It's also four to six cups of tea; four to six cans of most caffeinated soft drinks; a single dose of extra strength NoDoz; or enough milk chocolate for all but the most dedicated chocolate lovers.

*Nearly 90% of all adults share the caffeine habit*

If you're eating—or drinking—more than this, it may be time to think about cutting back. The Mayo Clinic warns that at 500 to 600 mg a day, side effects such as restlessness, anxiety, irritability, sleeplessness, nausea, tremors, anxiety, and depression can set in. That amounts to four to seven cups of most coffees (or a single 16 ounce Starbucks grande). Dehydration is also possible, since caffeine is a diuretic; instead of quenching thirst, caffeinated drinks contribute to fluid loss.

Some people are also naturally extra-sensitive to caffeine, and experience side effects well below the caffeine levels above. In those cases, it's best to listen to your body, and either lower your intake or avoid caffeine entirely.

## Caffeine Chemistry

Caffeine occurs naturally in coffee beans, tea leaves, and cocoa nuts. It can also be extracted from these and other plants, and then added to everything from Pepsi to Excedrin.

Wherever caffeine is found, it acts in the same way: it interferes with adenosine, a brain chemical that encourages sleep, and thus speeds up nerve cell activity. In response to this extra activity, the body releases adrenaline as well, which gives that caffeine high an extra kick.

# Caffeine Basics

By Janni Lee Simner

TONY KONECNY, WWW.TONX.ORG

The result is increased wakefulness and alertness—the reason many people consume caffeine in the first place.

Along the way, caffeine also increases levels of a second brain chemical, dopamine, and in doing so becomes a mood-enhancer as well.

## Different Conditions, Different Effects

Caffeine aggravates some medical conditions and eases others; in many cases, the full verdict is not yet in.

Caffeine seems to slow the conversion of glucose into energy, which means diabetics should be wary of it. It speeds up the heart rate, so those with heart disease might want to be careful as well, though the American Heart Association (AHA) says that whether there's a direct link between caffeine and heart problems is still under study.

Insomnia sufferers risk a vicious cycle: caffeine causes nighttime wakefulness, which causes fatigue the next morning. The quickest fix for that fatigue is to consume more caffeine, which causes more wakefulness, which causes more fatigue.

For asthma, caffeine has some benefit, since it helps open airways; it's no substitute for either medication or medical supervision, however. Migraine sufferers often actively seek out caffeine, because it causes blood vessels to constrict and thus provides some headache relief. Caffeine is an ingredient in many over-the-counter headache remedies.

*. . . caffeine doesn't seem to be harmful during pregnancy—again, so long as it's consumed in moderation.*

And caffeine doesn't seem to be harmful during pregnancy—again, so long as it's consumed in moderation. Most studies put safe levels around 150 mg a day, according to the Center for the Evaluation of Risks to Human Reproduction; this is only slightly lower than the recommendations for the general population.

Regardless of specific medical concerns, some prescriptions and over-the-counter drugs interact with caffeine, and it's always best to check for these interactions. Antidepressants, appetite suppressants, and asthma medications are particularly likely to carry caffeine warnings, according to the NIH.

## Those Withdrawal Blues

Those habituated to caffeine experience withdrawal symptoms 12 to 24 hours after their last dose, according to the AHA. Most coffee, tea, and soda drinkers know caffeine withdrawal headaches well; they're the flipside to caffeine's headache-controlling powers. Other possible withdrawal symptoms include irritability, restlessness, fatigue, drowsiness, and depression.

According to the AHA, these symptoms generally last a day or two. Individual experiences vary, though; some people experience no withdrawal at all, while for others symptoms persist much longer. "It takes about a week for me," says coffee-drinker Larry Hammer, who cuts his consumption when it creeps above about 32 ounces a day. The Mayo Clinic recommends gradually reducing caffeine to minimize withdrawal, but Hammer says he prefers to go cold turkey.

Then, after a couple weeks, he allows himself to start consuming caffeine—in lower quantities—once again.

Just like 90 percent of the rest of us. ❖

## Caffeine Content of Common Foods and Drugs

| | ITEM | SERVING SIZE OR DOSE | CAFFEINE CONTENT |
|---|---|---|---|
| COFFEES AND TEAS* | Coffee, Brewed | 8 oz cup | 85–135 mg |
| | Coffee, Caffeinated | 8 oz cup | 2–5 mg |
| | Coffee, Instant | 1 tsp | 75–95 mg |
| | Coffee, Starbucks | 8 oz cup (short) | 250 mg |
| | Espresso | 1 oz | 40 mg |
| | Tea, Brewed | 8 oz | 40–60 mg |
| | Tea, Iced | 8 oz | 25–30 mg |
| SOFT DRINKS | Coke Classic | 12 oz can | 34 mg |
| | Coke, Diet | 12 oz can | 45 mg |
| | Doctor Pepper (regular or diet) | 12 oz can | 41 mg |
| | Mountain Dew (regular or diet) | 12 oz can | 55 mg |
| | Nestea (sweetened or unsweetened) | 12 oz bottle | 26 mg |
| | Pepsi | 12 oz can | 37 mg |
| | Pepsi, Diet | 12 oz can | 36 mg |
| | Pepsi One | 12 oz can | 55 mg |
| | Red Bull | 250 ml can (about 8 oz) | 80 mg |
| | Sunkist Orange Soda (regular or diet) | 12 oz can | 41 mg |
| OVER-THE-COUNTER MEDICATIONS | Anacin (and Anacin Extra Strength) | 2 tablets | 64 mg |
| | Dristan | 2 tablets | 32 mg |
| | Excedrin (Extra Strength and Migraine) | 2 tablets | 130 mg |
| | Midol (Menstrual Complete) | 2 tablets | 120 mg |
| CAFFEINE TABLETS | NoDoz | 1 tablet | 100 mg |
| | NoDoz Maximum Strength | 1 tablet | 200 mg |
| | Vivarin | 1 tablet | 200 mg |
| CHOCOLATE | Cocoa or Hot Chocolate | 8 oz | 3–32 mg |
| | Cocoa, Hershey's | 1 Tbsp | 11 mg |
| | Chocolate Milk | 8 oz | 2–7 mg |
| | Chocolate Milk, Hershey's | 8 oz | 3–4 mg |
| | Milk Chocolate | 1 bar (1.5 oz) | 2–22 mg |
| | Milk Chocolate, Hershey's | 1 bar (1.5 oz) | 10 mg |
| | Dark Chocolate, Semi-Sweet | 1 bar (1.5 oz) | 8–52 mg |
| | Dark Chocolate, Hershey's | 1 bar (1.5 oz) | 31 mg |

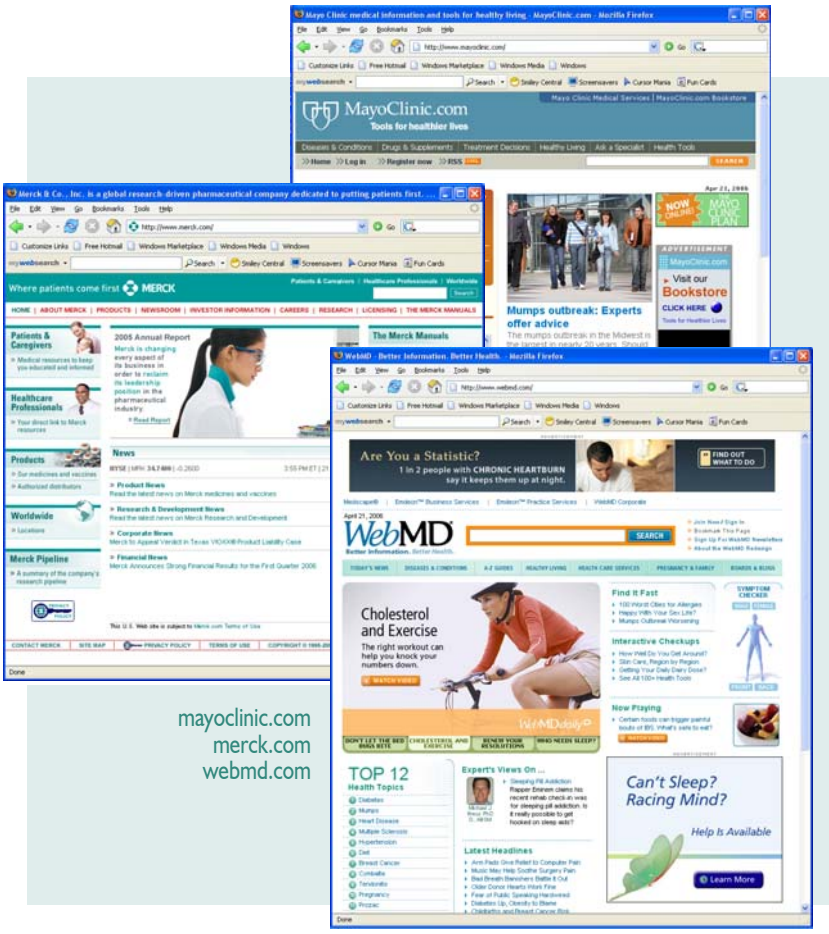
**The caffeine content of coffees and teas varies greatly, depending on brand, type of roast, and how long the drink is brewed or steeped; the figures above are merely estimates.*

*Sources: American Beverage Association, Mayo Clinic, Center for Science in the Public Interest, Hershey's, International Food Information Council, Red Bull, and product packaging information.*

# Web Medicine:

## Surfing for Support and Accurate Information Online

*When Laura's brother was diagnosed with a rare cancer, she became his advocate, seeking appropriate care and looking for therapies that might lead to a cure. Laura (not her real name) turned to the Internet.*




mayoclinic.com
merck.com
webmd.com

"I found a lot of sites that gave me a lot of information, which enabled me to ask (the doctor) educated questions, and he could answer me on his level rather than simplify things," she said. "I could absorb what he was giving me. It really helped me understand the options for treatment."

Laura's online education taught her about the chemotherapy treatments her brother would be receiving, and what side effects he could expect to experience.

"I could also tell him if a complaint he had was normal or not," she said, adding that Internet resources "empowered me as a patient advocate."

Laura found more than medical information on the Internet. She found emotional support through connecting with other people in similar circumstances, and also a vehicle for effectively letting family and friends know how her brother was doing.

"I found a support group through Yahoo Groups," she said. "They all were going through similar experiences, and shared useful Web sites, doctors to call and how to get through to them. They had been there or were there. That was very helpful."

Laura found more help through "blogs"—Web logs, or sites where "bloggers" share

# Health News Notes

## Thinning the Blood

Moderate alcohol consumption—three to six drinks a week—may make the blood less likely to clot, something that carries both health benefits and risks, according to the journal *Alcoholism*.

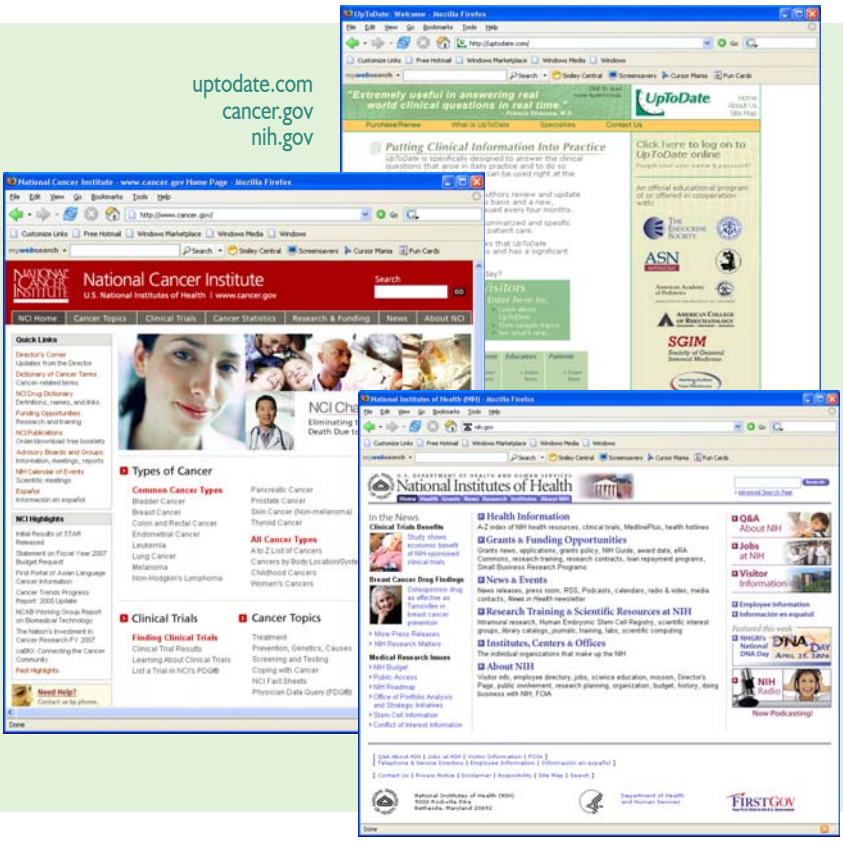
## SUV Safety

Don't look to the extra heft of an SUV to protect your children. Young passengers suffer injuries in about two percent of all crashes, regardless of whether they're in cars or SUVs, according to *Pediatrics*.

## Smart Bandages

One day, bandages may warn us when trouble lurks beneath their surfaces. University of Rochester researchers are developing flexible bandages that change color in response to infections.

uptodate.com
cancer.gov
nih.gov




opinions and experiences. "I started a blog for my brother to keep friends and family updated," she said. "I also found blogs of people going through similar situations, which was also beneficial."

As used by Laura, the Internet can be a powerful resource, providing information, emotional support and a vehicle for keeping friends and family in the loop.

*Laura found more than medical information on the Internet…she found emotional support*

### Consider the source

But not all of the information available on the Internet is reliable, noted J. Ted Crawford, DO, who has a family practice at Pusch Ridge Family Medicine.

"Overall, the Internet is a beneficial resource," said Crawford, "but there are exceptions. Occasionally a patient will come in with information about an alternative I've never heard about, and there's no research to support it."

Crawford advises using reliable online sources, such as the Mayo Clinic, Merck, Web MD and government sites. "The information needs to be supported by research," he said.

Too much information is another potential problem, Crawford added. "I have had patients come in with research papers they've pulled off the Internet, 40 pages they want me to read."

Crawford said the Internet is a source of "a lot of information, most of it good, but some way out in left field. People need to be careful and talk to their physician and get an opinion before trying" a treatment they've discovered on the Internet.

## A tool for doctors

In addition to informing patients, the Internet has become a valuable resource for doctors. There are subscription sites for medical professionals. One example is UpToDate, which allows doctors to keep up with the latest research and treatment information. UpToDate is a cooperative effort by clinicians at leading academic centers, and is an official educational program of, or offered in cooperation with, a number of major medical associations.

It is continually updated and reviewed. You can click on a keyword and it will take you to another part, giving you more information on that topic.

## Support groups fill in gaps

After sites that provide information, online support groups and discussion lists are probably the most commonly used Internet resources. In these groups you will find patients and family members with a common medical problem seeking help and sharing their experiences.

Some of the advice may be about issues outside the scope of what a doctor can provide, such as which brand of pads are most effective for incontinence. Other discussions may debate the validity of certain tests, and the relative effectiveness of treatments.

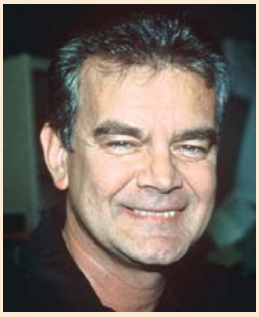
*Overall, the Internet is a beneficial resource, but there are exceptions.*

Charles Clausen, who facilitates a prostate cancer discussion group provided through the Association of Online Cancer Resources (www.acor.org), says the groups can be very useful, but not all of the information is reliable.

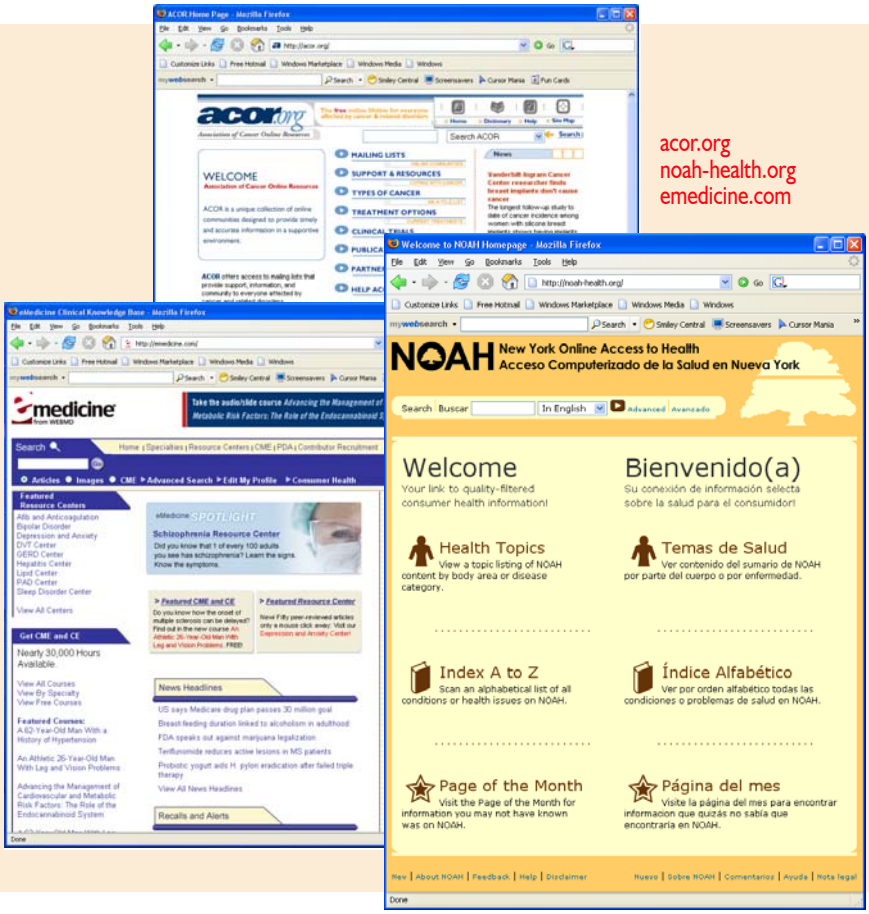
"There is a lot of noise and bad advice given on the lists, but usually knowledgeable members are available to counterbalance this—though perhaps not always as often as one would like," he said. "One must become as well-informed as one can, and judge for oneself."

Clausen, who describes himself as "a hermit in the Oregon woods connected to the net on a noisy low speed phone modem," has been a facilitator on the list for two years. "I'm not very clever at technical medical matters myself," he said. "I rely greatly on our most knowledgeable subscribers to put a damper on disinformation."

Discussion lists can inform members "about leading edge treatments that one's physician



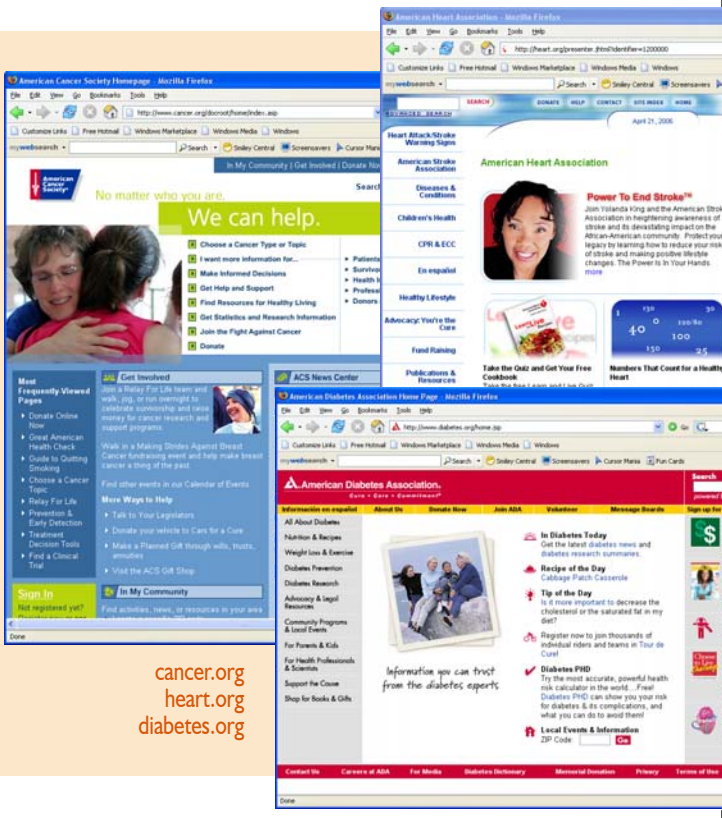
*J. Ted Crawford, DO advises using reliable online sources, such as the Mayo Clinic, Merck, Web MD and government sites. "The information needs to be supported by research," he said.*




acor.org
noah-health.org
emedicine.com

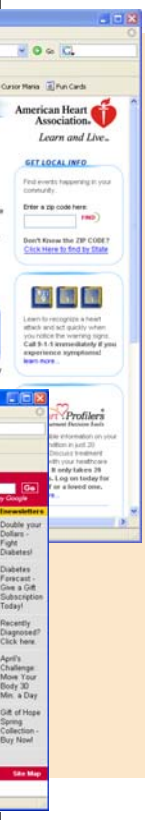
has not yet had time to become fully informed about," Clausen added. "I consulted with top-notch oncologist Eric Small at UCSF for a few years, and when I expressed an interest in estradiol patches, he referred me to Dr. Tomasz Beer at OHSU, as Dr. Small had not had time to explore this relatively new form of hormone therapy."

Discussion lists can fill the information gap left by doctors "who are so busy that they aren't always able to fill in all the details during office visits," Clausen added. "And then there are the questions you have between visits, or things you forgot to ask, or the things you have not fully understood. And often on the discussion lists, someone is able to quickly tell you where to look for the information you need, facilitating your research." ❖




cancer.org
heart.org
diabetes.org


familydoctor.org
jmir.org
cancer.gov
cdc.gov





# Resources

To the newcomer, seeking information on the Internet can be a bewildering and even intimidating experience. But the knowledge is there, from basic consumer tips to lengthy research papers. With persistence, caution and an ever-present fraud detector, you can find the answers to your health-related questions.

Below are a few tips to help you navigate the Internet in search of medical information, along with a sampling of Web sites.

## If they're selling something, don't buy it

The old huckster who dispensed snake oil out of his horse-drawn buggy, promising cures for everything from women's "vapors" to malaria, has found a new home in cyberspace.

A lot of Internet sites will provide "research" in support of supplements and products, which you can conveniently order on the spot. Many of these products will claim to cure multiple ailments, which should be a red flag. Others will have lots of anecdotal testimonials but no valid, peer-reviewed research.

If you are seeking an energy boost or want to grow hair, your worst-case scenario is probably that you wasted your money. But if you have a serious disease or health condition, you could be jeopardizing your life on the basis of a convincing but hollow advertising pitch. Always consult your physician before trying one of these products.

## Find names you can trust

Medical research institutions such as the Mayo Clinic provide valuable information for medical consumers. Other good sources may be found at commercially sponsored sites such as eMedicine. WebMD combines a variety of services, including consumer information, into a business operation that is traded on NASDAQ. The New York Online Access to Health (NOAH—www.noah-health.org) site offers consumer information in English and Spanish.

Organizations such as the American Cancer Society, American Diabetes Association and American Heart Association provide disease-specific information—including prevention—and a variety of services, from resources in your community to links to other sites. Many of these sites are bilingual.

Another good source may be found from professional associations in medical specialties, such as familydoctor.org, a site provided by the American Academy of Family Physicians.

The Journal of Internet Medical Research provides peer-reviewed research on a limited basis to non-subscribers.

## The government can help you

Sites such as the Centers for Disease Control and National Institutes of Health provide a variety of reliable information. The National Cancer Institute (NCI) has a very useful resource, the NCI Drug Dictionary, which contains technical definitions and synonyms for more than 500 agents that are being used in the treatment of patients with cancer or cancer-related conditions.

## PRACTICING TUCSON OSTEOPATHIC PHYSICIANS BY SPECIALTY

Information obtained from:
*AOA Yearbook and Directory of Osteopathic Physicians* and the *Arizona Board of Osteopathic Examiners in Medicine and Surgery—Directory of Licensed Osteopathic Physicians*

### ACUPUNCTURE
Chiu-An Chang, DO *

### ADDICTIVE DISEASES
William C. Inboden, DO *
Arlene M. Kellman, DO *
Bethann Mahoney, DO *
Bernice E. Roberts, DO *

### ADOLESCENT & YOUNG ADULT
William C. Inboden, DO *

### AEROSPACE MEDICINE
Gary K. Brandon, DO *

### ANESTHESIOLOGY
Clyde A. Cabot, DO
Aaron Hammond, DO
Mark Lathen, DO
Achit B. Patel, DO
Elson L. Revak, DO
Donald G. Sansom, DO
Gary G. Willardson, DO

### CARDIOLOGY
Budi Bahureksa, DO *
Kathryn L. Bates, DO *
Phillip J. Dattilo, DO *
Neil S. Freund, DO *
Kirk M. Gavlick, DO *
Tedd M. Goldfinger, DO *

### CARDIOLOGY, INTERVENTIONAL
Kirk M. Gavlick, DO *

### CHRONIC PAIN MANAGEMENT
Kenneth S. Young, DO *

### DERMATOLOGY
Marc I. Epstein, DO

### EMERGENCY MEDICINE
Michael J. Bundschuh, DO
Charles R. Ganzer, DO *
Donald Kane, DO *
Lori E. Levine, DO *
Peter P. Michalak, DO *
A-Rahman Qabazard, DO
Louis C. Steininger, DO
William J. Vander Knapp, DO
John T. Winter, DO

### FAMILY PRACTICE
Daniel J. Bade, DO
Raymond P. Bakotic, DO
Michael F. Bischof, DO
Don H. Carlson, DO *
Kimberly Carlson, DO *
Peter R. Catalano, DO
Kimy Charani, DO
Kathleen Counihan, DO *
J. Ted Crawford, DO *
Susan D. Dalton, DO *
Maurice A. Davidson, DO *
Richard D. Dexter, DO *
Sandra M. Dostert, DO *
James L. Dumbauld, DO *
Michelle E. Eyler, DO *
Thomas W. Eyler, DO *
Roderick J. Flowers, DO
Albert R. Fritz III, DO *
Charles R. Ganzer, DO *
Ronald L. Goedecke, DO *
John Q. Harris, DO *
Melissa M. Heineman, DO
Roberta Hindenlang, DO *
William C. Inboden, DO *
Brian Jenkins, DO
David H. Kahan, DO *
Donald L. Kwasman, DO *
Anthony S. Levin, DO
Kristin Lorenz, DO *
David Los, DO
Paul K. Lund, Jr., DO
John F. Manfredonia, DO *
Christopher L. Marsh, DO *
Patrick J. Marsh, DO *
Cdr. Alexander R. Mazerski, DO *
James A. McCartan, DO *
Julie McCartan, DO
Patricia Merrill, DO
Peter P. Michalak, DO *
Robert C. Miller, DO *
Victoria E. Murrain, DO
David L. Musicant, DO
David P. Myers, DO *
John P. Nestor, DO
Randee L. Nicholas, DO
Nicholas C. Pazzi, DO *
Christian K. Peters, DO *
Gregory Petersburg, DO *
Shawn G. Platt, DO *
R. Ryan Reilly, Jr., DO
Gerald B. Roth, DO *
Wallace E. Rumsey, Jr., DO
Andrea M. Schindler, DO
Leah M. Schmidt, DO
Randolph F. Scott, DO *
Philip E. Shoaf, DO
Jerry R. Sowers, DO *
James E. Tooley, DO *
John M. Wadleigh, DO *
Steven B. Wallach, DO *
Cheryl L. Wathier, DO
Frederick P. Wedel, DO *
Dale N. Wheeland, DO *
Howard R. Zveitel, DO

### GASTROENTEROLOGY
Edmund Krasinski, Jr., DO *

### GERIATRICS
Michael J. Connolly, DO *

### HEPATOLOGY
Edmund Krasinski, Jr., DO *

### HOMEOPATHIC
Arlene M. Kellman, DO *

### HOSPICE PALLIATIVE
John F. Manfredonia, DO *

### HOSPITALIST
Michael Alloway, DO *
Nicholas Bastiampillai, DO *
Charles R. Ganzer, DO *
George Haloftis, DO *
Jocelyn Hendricks, DO *
James A. McCartan, DO *

### INTEGRATIVE MEDICINE
Chiu-An Chang, DO *
Katherine A. Worden, DO *

### INTERNAL MEDICINE
Michael Alloway, DO *
Budi Bahureksa, DO *
Nicholas Bastiampillai, DO *
Kathryn L. Bates, DO *
Scott J. Biehler, DO
David W. Buechel, DO
David L. Capaccio, DO
Lisa Castellano, DO
Michael J. Connolly, Jr., DO *
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Jocelyn Hendricks, DO *
Jerry H. Hutchinson, Jr., DO
Arlene M. Kellman, DO *
Douglas N. Kirkpatrick, DO *
Lori E. Levine, DO *
William C. Ludt, Jr., DO
Dung T. Nguyen, DO *
Sean M. O'Brien, DO *
Michael A. Pack, DO
Vinus K. Patel, DO
Luon Peng, DO *
Deborah Jane Power, DO *
Darush Rahmani, DO *
Aspen I. Ralph, DO *
Franz P. Rischard, DO *
Stephen J. Ruffenach, DO *
David M. Schwartz, DO
Gerald W. Sikorski, DO *
T. Bryson Struse III, DO *
Bridget T. Walsh, DO *

### LOCUM TENENS
Susan D. Dalton, DO *
Sandra M. Dostert, DO *
Cdr. Alexander R. Mazerski, DO *
Bernice E. Roberts, DO *
Gerald W. Sikorski, DO *

**IF YOU ARE A PRACTICING TUCSON DO AND ARE**

## NEONATOLOGY
Abraham Bressler, DO *
Lynn E. Edde, DO

## NEPHROLOGY
Sean M. O'Brien, DO *
Luon Peng, DO *
Stephen J. Ruffenach, DO *

## NEUROLOGY
Maura A. Kolb, DO
Kenneth S. Young, DO *

## NUCLEAR MEDICINE
Phillip J. Dattilo, DO *
T. Bryson Struse III, DO *
T. Kent Walsh, DO

## OB/GYN
David W. Beal, DO
Jeffery A. Palen, DO

## OCCUPATIONAL AND PREVENTIVE MEDICINE
Gary K. Brandon, DO *
J. Ted Crawford, DO *
Carol M. Hutchinson, DO *
John W. McCracken, Jr., DO *
Dung T. Nguyen, DO *

## OPHTHALMOLOGY
Mark L. Griswold, DO
Whitney A. Lynch, DO
Kenneth S. Snow, DO

## ORO-FACIAL PLASTIC SURGERY
Joseph M. Small, DO *

## ORTHOPEDIC SURGERY
Rex D. Cooley, Jr., DO *
Ty Endean, DO
Roger T. Grimes, DO
James L. Hess, DO

## OSTEOPATHIC MANIPULATIVE MEDICINE/TREATMENT
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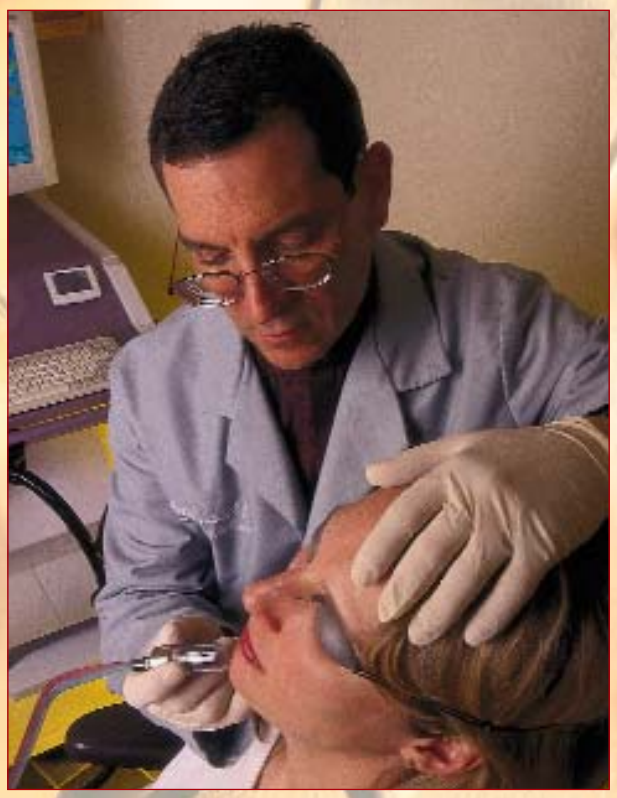

DAVID SANDERS

*Marc Epstein, DO, specializes in dermatology with Mountain View Dermatology, LTD.*

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