

## FACT SHEET

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### **Public Lacks Awareness of Vascular Damage From Smoking *Minimally Invasive Treatment Options Available for Many Smoking-related Diseases***

In the United States, nearly one in five deaths, or an estimated 440,000 deaths per year, are related to tobacco use.<sup>1</sup> Approximately half of all Americans who continue to smoke will die due to smoking-related complications.<sup>1</sup> Second-hand smoke alone causes 150,000 to 300,000 lower respiratory tract infections, such as bronchitis and pneumonia, in young children each year.<sup>1</sup> Of these, between 7,500 and 15,000 result in hospitalization.<sup>1</sup> Plus, a pregnant woman can harm or kill her unborn child by smoking.

Of the more than 4,000 chemicals that are emitted by a lit cigarette, 43 are known to cause cancer. Tar that can cause cancer in the tissues it reaches, highly addictive nicotine which affects the nervous system and carbon monoxide that reduces the ability of blood to carry oxygen throughout the body are the most dangerous chemicals. When the chemicals come into direct contact with tissues or organs, such as the mouth, throat, or lung, the rate for cancer is from twice to 14 times as high as that for non-smokers. Although most people are well aware of the risk of cancer from smoking, few people realize the damage smoking causes throughout the body's vascular system.

### **Smoking and Vascular Disease**

Smoking damages the blood vessels and smokers are at risk for all vascular diseases including peripheral arterial disease, stroke, heart attack, abdominal aortic aneurysm and subsequent death.

In a healthy blood vessel, the inner lining of the arteries, known as the endothelium, constricts and dilates with blood flow. Smoking damages the endothelium, making arteries prone to spasms and deposits of diffuse plaque that diminish their ability to dilate properly. This condition is known as atherosclerosis, often called "hardening of the arteries." Atherosclerosis is a gradual process in which cholesterol and scar tissue build up, forming a substance called plaque that clogs the blood vessels and makes them less elastic.

Smokers are at increased risk for peripheral arterial disease, clogged arteries in the legs, that cause insufficient blood flow to get to the leg muscles. This causes pain, especially when walking and, left untreated, this insufficient blood flow can lead to limb amputation. While this may require angioplasty and stenting to improve blood flow, many people can avoid these procedures and alleviate their symptoms just by quitting smoking and beginning a specific exercise regimen. Smoking makes that big a difference in vascular disease.

## Treatments

Interventional radiologists provide treatment for many smoking-related diseases. Since they are first trained in diagnostic radiology, they use imaging to understand, visualize, and diagnose the full scope of the disease's pathology and to map out the procedure tailored to the individual patient. Then during the procedure, they image as they go, literally watching and guiding their catheter through the vascular system or through the skin to the site of the problem. Following are some of the conditions that can be treated by interventional radiologists:

*Aortic abdominal aneurysm* – A weak area in the aorta, the main blood vessel that carries blood from the heart to the rest of the body. As blood flows through the aorta, the weak area bulges like a balloon and can burst resulting in death if it gets too big. An interventional radiologist can perform a stent graft to reinforce the weak artery wall and avoid major abdominal surgery.

*Peripheral arterial disease* – Hardening of the arteries (atherosclerosis) in the legs that can cause intermittent claudication—pain that occurs when a person walks and subsides when s/he stops. Atherosclerosis causes the arteries that carry blood to the arms or legs to become narrowed or clogged. Interventional radiologists can treat this by performing a balloon angioplasty to open a blocked artery and placing a stent to hold the artery open, if needed. However, many people are treated just with smoking cessation and a medically supervised exercise program.

*Carotid artery disease and stroke* – In some patients, atherosclerosis in the carotid artery in the neck can lead to ischemic stroke. Plaque build-up in the carotid artery may result in a stroke by either decreasing blood flow to the brain or by breaking loose and floating into a smaller vessel, depriving a portion of the brain of blood flow. In patients at high risk of having a stroke, the narrowed section of artery may be reopened by an interventional radiologist through angioplasty and reinforced with a stent, thereby preventing the stroke from occurring.

*Stroke* – Most commonly caused by a blood clot in the brain that starves the brain from receiving oxygen, which can cause the affected sections of the brain to die. If caught in time, within six hours of the symptoms, an interventional radiologist can deliver a clot-busting drug directly into the brain to the site of the clot to dissolve it and restore blood flow to the brain. This treatment can often prevent the disabling effects of a stroke.

*Lung cancer* – Cigarette smoking is the most common cause of lung cancer.<sup>2</sup> Interventional radiologists can treat lung cancer patients nonsurgically by “freezing” tumors with cryotherapy or “cooking” them with radiofrequency heat.

*Kidney cancer* – 32,000 Americans are diagnosed with kidney cancer each year.<sup>2</sup> Although surgical removal of the kidney offers the best chance for a cure, some patients are not surgical candidates. Interventional radiologists offer nonsurgical treatment using radiofrequency heat that “cooks” and kills the tumor.

*Osteoporosis* – Because smokers have lower levels of estrogen, smoking is bad for their bones and is a risk factor for osteoporosis, which can result in spinal fractures.<sup>3</sup> By injecting bone cement through a needle into fractured vertebrae, interventional radiologists can shore up the vertebra and relieve pain. This procedure, known as vertebroplasty, is a pain treatment for people with spinal fractures that have not responded to medical management.

### **Benefits of IR Treatments**

- Often no general anesthesia is required
- Procedures are often outpatient
- Less risk
- Less pain
- Less risk for infection
- Shorter hospital stay

### **About Interventional Radiologists**

Interventional radiologists are doctors who specialize in minimally invasive, targeted treatments that have less risk, less pain and less recovery time compared to open surgery. They use their expertise in interpreting X-rays, ultrasound, MRI and other diagnostic imaging studies to understand, visualize and diagnose the full scope of the disease's pathology and to map out the procedure tailored to the individual patient. Then during the procedure, they image as they go to guide tiny instruments, such as catheters, through blood vessels or skin, to treat diseases at the site of the illness nonsurgically.

Interventional radiology is a recognized medical specialty by the American Board of Medical Specialties. Interventional radiologists complete preliminary training in Diagnostic Radiology and advanced training in Vascular and Interventional Radiology. The American Board of Radiology certifies their specialized training.

### **For Further Information**

For more information on smoking or interventional radiology, visit the SIR Web site at [www.SIRweb.org](http://www.SIRweb.org).

1. American Cancer Society, "Cancer Facts & Figures 2004."
2. National Cancer Institute.
3. National Osteoporosis Foundation. *Boning Up On Osteoporosis, A Guide to Prevention and Treatment.*