



HYPERBARIC MEDICINE: IS SMOKING A CONTRAINDICATION?

by *Kenneth Capek RRT, CHT, MPA*

Should we treat patients who continue to smoke? Does smoking have a negative effect on healing and hyperbaric treatment? Dr. Eric Kindwall states in his textbook, "Hyperbaric Medicine Practice", "Healability of a chronic wound depends on correcting coexisting medical conditions and risk factors such as smoking...the hyperbaric practitioner must assure that the wound has enough blood supply to heal prior to initiating hyperbaric oxygen therapy (HBOT)". Certainly any candidate for hyperbaric oxygen therapy would benefit if they quit smoking, but what if they do not quit. Can we deny treating them because they smoke? Is it an "absolute" contraindication or a "relative" one? The only reference I found that placed smoking near the "absolute" contraindication category was from a book entitled *Hyperbaric Medicine*

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Procedures from St. Luke's Medical Center, Milwaukee, Wisconsin in regard to Buerger's disease. This disease is characterized by acute inflammation and thrombosis (clotting) of arteries and veins affecting the hands and feet. It is associated with tobacco use, particu-

larly cigarette smoking. It has been postulated that Buerger's Disease is an "autoimmune" reaction triggered by one of the toxins in tobacco. The treatment is specifically to stop smoking because to continue will lead to gangrene and amputation of digits. That is a certainly a strong case against smoking but what about other diseases? There are 4,000 chemicals and 50 carcinogens in cigarette smoke, two of which; nicotine and carbon monoxide pose a significant challenge to wound healing. Many studies have shown that nicotine adversely affects the cardiovascular system (among others) by inducing vasoconstriction, thrombosis and increasing blood pressure and heart rate. Smoking has been linked to myocardial infarction, unstable angina pectoris, sudden cardiac death, stroke and peripheral artery occlusive disease and arteriosclerosis. Carbon monoxide has the added negative impact by stealing the seat that oxygen usually sits in, on the red blood cell bus. Smoking can produce changes in systemic blood pressure from 4% to 9% and heart rate by from 18% to 25% after smoking only one cigarette within five minutes. A study conducted in 1974,

documented a 42% reduction in blood flow in the digits of normal volunteers after smoking only one cigarette and the effect lasted for 30 to 50 minutes. Another study examining transcutaneous oxygen levels (TCOM) demonstrated decreases in the range of 25% to 35% among volunteers after one cigarette. Wound infection rates have been shown to be at least 2% higher in smokers than non-smokers. Smoking can cause impaired periodontal healing and greater post-operatively flap necrosis.

Okay, the case is a strong one against smokers but deny therapy? Do we deny treating diabetic patients because their eating habits are horrific? Medicare denies coverage for smokers in pulmonary rehabilitation programs if they smoke.

I recall some attitudes that respiratory therapists had when waiting to treat patients with breathing medication only to be delayed because the patient was having a cigarette. Some believed these smokers didn't "deserve" our care. Then there is the high cost for HBOT paid by insurance and ultimately society, which may be wasted due to deleterious effects of smoking. Smokers also pose an added fire and safety risk when they are treated. We don't have pockets in our treatment scrubs because of smokers. Smokers will unknowingly place butane lighters or matches in their pockets out of habit. On the other hand don't patients have rights of self-determination whether to smoke or not and isn't smoking still legal?

I think at best we must strongly encourage these patients to quit smoking for all the reasons just discussed. I don't think we stand on morally or ethically sound ground if we automatically refuse to provide HBOT to these patients. We must make every effort to help them quit and then monitor how well they do with the quitting process. Quitting smoking can make a huge difference and reduce those risk factors and detrimental effects. If your patient is an inpatient, hospitals will use various methods to help smokers quit. A good approach is to use the clinical practice guideline "Treating Tobacco Use and Dependence" from the AHRQ (Agency for Healthcare Research and Quality). This guideline recommends that

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every patient be screened for smoking and an intervention initiated. The guideline approach has 5 components; ASK – Identify who smokes by asking every patient if they presently use tobacco products. Since hyperbaric patients are typically outpatients I suggest using your nose for evidence of smoking since smokers have been known to lie about their addiction. ADVISE – Basically tell them how important is to quit and some dangers but frame it in a more positive way, list the many benefits of quitting. ASSESS – Determine how ready they are to quit at this point. There are stages of readiness for someone to quit and different interventions may or may not work depending on these stages. Someone in the first, precontemplation stage may not be ready to even give quitting a thought. ASSIST – Give the patient educational materials and discuss it with them. Being an inpatient creates a good “teachable” moment and every effort should be made at this time to help them quit. ARRANGE – Give them contact information for when they leave the hospital for a counseling session, support group or hotline to call. Motivation can also be achieved with the outpatient by telling them the importance of quitting especially in relation to their personal problem, a non-healing wound. Most hospitals have outpatient smoking cessation programs and some non-profit organizations like the American Cancer Society or American Lung Association can provide information and programs.

A outpatient smoking cessation program consists of many similar components. It typically starts with a review of the dangers of smoking but a better way to present this is in terms of improvements when one quits. This keeps a positive light on the subject and speaks more clearly to the question; what’s in it for me? Every program requires that a quit date be set which helps create a sense of commitment for the smoker. Each smoker needs a good plan that they are comfortable with and will most likely follow. This plan must include a timetable if they are not going the “cold turkey” route and include any tools that they may use. These tools can be in the form of nicotine replacement therapy (patch, gum, inhaler, etc.) or medications such as the antidepressant Zyban or the latest medication Chantix. Chantix works by minimizing the “pleasure” of smoking while also minimizing the withdrawal symptoms associated with quitting. Most programs will discuss triggers to smoking which put a smoker at risk for failure and managing a relapse that may occur 6 or 7 times on average. A good program will also address two important areas that create the most fear in people who want to quit; weight gain and stress management and how physical activity can help. Although it is not easy to break the addiction, habit and psychological hold of cigarettes, everyone has the ability to do so and motivation, knowledge commitment and support are the key factors.

I think we should treat smokers only after some serious discussion on the reasons to quit and our expectation that they make a significant effort to help themselves. The patient that smokes will require more of our attention and the development of policies and practices for smoking interventions.

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