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## Episode 19: Do You Smell Like the Elephant in the Room?

Sometimes bad breath can be a sign of a serious underlying medical condition. Doctors and scientists are discovering that they can actually diagnose cancer and other diseases from the unique bad breath odor they create. Find out more on today's episode of This Old Tooth

Hello everyone. You are listening to episode number 19 of This Old Tooth, a podcast devoted to providing you with honest agenda-free information about how you can get and keep a beautiful healthy smile for life. I am your host, Dr. Lisa Germaine Today I will take my last small bite in my series about bad breath, its causes and what you can do about it and I will discuss how certain diseases create such a distinct bad breath odor that it can help doctors diagnose the problem.

You've done it all. You've had your teeth professionally cleaned and you're brushing twice a day for two minutes and flossing every night before bed. Your gums are no longer bleeding and your teeth are no longer sensitive. You are brushing your tongue, passing on the sugary treats, and you are avoiding eating raw onions and garlic. You are chewing sugarless gum, eating mints with xylitol hydrating and using a mouthwash that does not contain alcohol and yet your breath still tastes and smells horrible.

Unfortunately it is time to address the elephant in the room. You might have a more serious underlying medical problem. Diseases that affect the blood can also affect one's breath because when we exhale, we're actually removing carbon dioxide carried to our lungs by the blood so diabetics can carry a distinct sweet and fruity bad breath smell. Isn't it kind of funny though, how bad breath is described as sweet and fruity? But that's what it is and again, the breath is so markedly distinct that it can be a clue in diagnosing diabetes. So maybe all bad breath isn't so bad. Now this is the same with kidney or liver disorders. They can send unwanted smells to the blood to be released via the lungs and these are often described as fishy smelling or fecal in their odor. It is now widely known that lung cancer and other more serious diseases will cause a

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very distinct breath odor. So much so that breath is now being used in early detection. Now in episode number 16 of This Old Tooth, I reviewed how sinus infections or other airway related illnesses can cause bad breath due to the presence of nasal secretions that may drain in your mouth. A perfect example of this is a chronic post nasal drip that frequently occurs with sinus infections or even allergies. And as you can imagine, coughing up sputum from lung infections can also cause bad breath. But to take it one step further, doctors have taken the art of diagnosing disease from smell one step further by creating devices that analyze breath odor to detect certain types of cancer, particularly lung cancer. A handheld device, which is roughly about the size of a quarter, uses a colorimetric sensor array to detect early-stage lung cancer. Now, a colorimetric sensor array is, which I had no idea what it was, is really just a number of thin films, each of which is coated with a different dye and the dyes change color as a result of the chemical interactions between the molecules.

So patients with lung cancer have volatile organic compounds, mainly alkalines and benzene derivatives in their breath and because air passes through the lungs, the breath will pick bits of these VOC volatile organic compounds. When the lung cancer patient breathes into the testing device, the dye that is sensitive to the VOC automatically changes color, since the dye will react to even the slightest presence of VOC. This methodology has a 75% success rate. The good news is that lung cancer isn't the only form of the disease that can be detected through the breath. Researchers at the University of Michigan are perfecting a device to test breath for the presence of metabolites associated with breast cancer. Metabolites are the product of the body's metabolism. They are directly involved in the growth development and reproduction of normal cells. The basic principle behind the breast cancer detection device is to separate normal metabolites from those that result from the presence of breast cancer.

The goal is to create a tester that is a noninvasive and inexpensive over the counter method to screen for breast cancer. Inanimate devices aren't the only methodologies being tried in the detection of lung and breast cancer. Man's best friend may now become man and woman's best way to detect for those two types of cancer. In the early stages, researchers are currently testing to see if dogs can detect cancers by sniffing the exhaled breath of cancer patients. Five dogs were given three weeks of training to learn to detect lung or breast cancer by sniffing the breath of cancer patients. They were trained that when they positively identified a cancer patient, they were to sit or lie down directly in front of the test station containing the patient's sample. They were also trained to ignore the test stations that contained healthy breath samples. After training was completed, the dogs were presented with the tubes that contained

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breath samples from 55 patients with lung cancer, 31 with breast cancer and a control sample of 83 healthy individuals.

All the cancer patients had confirmed their diagnosis either through a mammogram or CT scan and had not received any chemotherapy. The study showed that the dogs were able to detect breast and lung cancer with an accuracy rate of between 88 and 97% the tests also indicated that the dogs could detect both early and late stages of the diseases. All of these studies have one vital factor in common. They proved that analyzing human breath has the potential to provide a noninvasive and more cost effective method of testing for cancer. Making cancer screening cheaper and more available means it will increase the incidences of early detection when their prognosis is best for recovery. Now the downside to a lot of these is there really is no direct cure for the bad breath part. Getting the disease diagnosed and under control may be one's only real defense against the bad breath they may cause, but until that happens you can use gum, sprays or mints to somewhat mask the breath, but they probably are not as effective as one would like.

So if you think that something is off with your breath and you can't control it and you've been to see your dentist and everything is okay with your teeth and mouth, please see your physician and make sure you get screened for an underlying medical condition.

And now for a fun fact.

A sneeze zooms out of your mouth at over 600 miles per hour. I guess it's a good thing that your nose can't get a speeding ticket.

If you have any questions about your dental health, please go to my website, <http://thisoldtooth.com> or you can go to <http://yourdentalquestion.com>. I hope to be able to answer it on my show and give you a shout out. As a gift to my subscribers, you can go to my website <http://thisoldtooth.com> to download a copy of my ebook, How To Choose a Dentist, The Ultimate Guide, for free. In my next episode, I will interview Dr. Ron Goldstein from Atlanta, Georgia. He is widely considered the father of aesthetic dentistry. He will discuss all of the ways you can get a beautiful smile. Now that is an episode you really don't want to miss. Until then, thank you for listening and remember, be true to your teeth or they will be false to you.

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