

Self Interview

Lance T. Vernon, DMD, MPH

Q- What is it you're studying?

A- I'm looking at the connection between gum disease and heart disease.

Q- Do you think there is a link?

A- It is possible.

Q- How so?

A- Well, gum disease is caused by specific bacteria. These bacteria can get into the bloodstream and attach to the walls of distant blood vessels. So, either the bacteria could infect the vessel wall or the presence of the bacteria could cause inflammation. In either of these scenarios, oral bacteria may be contributing to changes in the blood vessel. Over time, these changes can lead to hardening of the arteries, or atherosclerosis.

Q- Why do this in a group of people with HIV?

A- The medicines they take, even though they save their lives, can also cause acceleration towards heart disease. So, following these individuals for 2 years is, in a way, similar to following someone who does not have HIV, and who isn't taking the anti-virals, for maybe 10 years.

Q- You've been working on this grant over a year now, have you seen many subjects?

A- Only just recently have I been getting a good stream of referrals and seeing subjects consistently. It took a while. Most of the first year I was working out logistics, getting approval from the Institutional Review Board, and fine-tuning measurements. I was approved to see research subjects at the General Clinical Research Center, or the GCRC, on the 7th floor of Rainbow Babies and Children's Hospital. There are a lot of other things, too, like setting up a database, establishing the referral system—and I take graduate course work too, classes that relate to what I'm doing and what I hope to do in the future. It's a lot of epidemiology and immunology.

Q- But now you're getting referrals from the word of mouth of subjects you've already seen?

A- That's happening, too—which is good. It's a good sign that even though the study visit takes about 4 hours, my study volunteers still find it's kind of fun.

Q- Is any of it painful?

A- Not really. A blood draw, periodontal tissue probing, and on the ultrasound of the arm, we squeeze a blood pressure cuff around the bicep to cut off the blood flow for 5 minutes. It's a little annoying, but not bad. I've had it done on me.

Q- At the GCRC, you're doing ultrasounds, why?

A- They are our outcome measures. We take an ultrasound of an artery in the neck and in the arm. These are very sensitive reads of early progression towards heart disease. One, the IMT, tells how thick the carotid arterial wall is with deposits. The other, the BART, tells how elastic the brachial artery is after the blood flow is cut off—with the blood pressure cuff. The greater the change, the more elastic the vessels, the healthier the person is. They are considered sub clinical measures, and correlate well with the health of the heart. This is done instead of following people for a number of years until they develop a clinical outcome like, for example, having a heart attack.

Q- What else do you measure?

A- A lot of confounding measures—factors that may relate to both the exposure and the outcome—for example diet, exercise, exposure to cigarettes, and things like blood levels of lipids, what type of medications people are taking and immune markers of inflammation. These factors need to be collected and then modeled during the data analysis. Our handling of confounding factors will be one strength of this study.

Q- Is the entire study visit done at the GCRC?

A- No, half of it is at the School of Dental Medicine.

Q- What sort of things do you look at there?

A- I do a full mouth exam and a complete probing of the gum tissue. I take digital photographs with an assistant and then scrape a sample of dental plaque from under the subject's gum-line. This gets analyzed in the lab for levels of specific bacterial DNA using real-time PCR. Here, we're examining gum disease clinically as well as microbiologically—we can see if the two are correlated and which method relates better to our outcome measure.

Q- So, what's your hypothesis?

A- It's like this: those who have higher levels of gum disease will, across time, progress more quickly towards heart disease than those who have lower levels of gum disease. If there is an interaction between the anti-viral medication and the bacteria that causes gum disease, and this interaction enhances risk for heart disease, then this study could shed light on causality or the mechanisms involved.

Q- Sounds pretty glamorous.

A- Ah, it's not. I'm a one man show. I schedule, coordinate, fax forms here, mail letters to the subjects, I explain the study, consent the subjects, and then I'm with them for the four-hour visit. Then I've got to clean up, hustle the plaque samples to a

freezer in the third floor of the Biomedical Research Building, write down my findings and suggestions and mail them to each subject. It's a lot of leg-work.

Q- Why do you carry around that big styrofoam box?

A- It's full of ice and keeps the plaque samples cold. Sometimes it's about an hour or more before I get the samples into the freezer. I could probably use a smaller box, but this one seems to do the job.

Q- So do you think that gum disease may be a major cause of heart disease?

A- Major, no, but it may be a contributor. Only about 50% of the causes of heart disease are known. That leaves a lot that's not known. Identifying any cause is important, given that heart disease is so widespread.

Q- Which means?

A- Which means that you could target those with gum disease, treat it aggressively, and you may be able to lower people's risk for heart disease.

Q- Do you think periodontal disease is under-recognized in the general public?

A- Definitely. Big time.

Q- If you could hope for any one change that your study might help bring about, what would it be?

A- That there would be a greater sense of urgency to treat gum disease. And that people in high-risk groups, like those with HIV and diabetes, were treated more aggressively—to keep their gum disease under better control, and so live a healthier life.

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