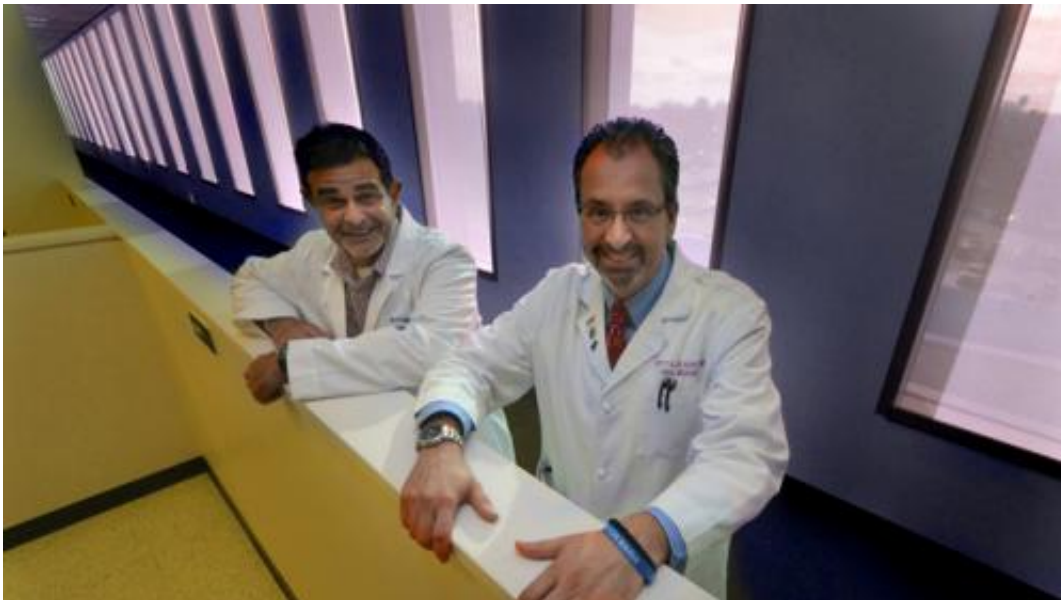


Researchers look for culprit behind oral health problems in HIV-positive patients

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This is a photo of Dr. José A. Vazquez, Chief of the Section of Infectious Diseases at the Medical College of Georgia at Georgia Regents University, and Dr. Scott S. De Rossi, Chairman of the Department of Oral Health and Diagnostic Sciences at the Georgia at Georgia Regents University College of Dental Medicine. Credit: Phil Jones

Researchers want to help HIV-positive patients live better by understanding why their essentially dormant infection is still wreaking havoc in their mouth.

Even with meticulous dental hygiene, tooth decay and gum disease, as

well as infections by yeast, bacteria, and viruses such as human papillomavirus, continue to plague many patients, said Dr. José A. Vazquez, Chief of the Section of Infectious Diseases at the Medical College of Georgia at Georgia Regents University.

"If we can improve the [oral health](#) of these patients, we believe it will further improve their overall health," Vazquez said.

He and Dr. Scott S. De Rossi, Chairman of the Department of Oral Health and Diagnostic Sciences at the GRU College of Dental Medicine, are investigators on a new National Institutes of Health-funded study that will better determine whether the problem is the HIV infection, the antiretroviral therapy or both.

They have joined researchers at Louisiana State University and Ohio State University in collecting samples from the mouths of 440 HIV-positive patients. They are performing sophisticated molecular tests on the samples that should provide a census of the living organisms in the mouth as well as a T-cell count— an indicator of the activity level of the immune system – then comparing those findings with uninfected individuals.

They also are looking at whether antiretroviral therapy changes the community of oral organisms, called microbiota, by taking a census both before and after therapy starts and by comparing the populations in patients who have oral complications like HPV and yeast, with those who don't.

They are assessing the general health of the teeth and gums as well. "Another big question is, why do these patients have such really bad [gum disease](#) and [tooth decay](#)," said Vazquez, a principal investigator on the new study that brings \$1.5 million in NIH funding to the university.

While even a healthy mouth is full of bacteria - in fact, more than 600 species play a role in keeping the mouth healthy – Vazquez and De Rossi suspect a different set of bacteria set up shop in these patients.

Vazquez's lab also will be analyzing the different types of yeast recovered from study patients to determine if HIV patients have more aggressive or treatment-resistant strains.

"One of the earliest signs of HIV can be a [yeast infection](#) in the mouth," said Vazquez. In the worst case scenario, this fungal infection can quickly spread into and block the esophagus. "They can't swallow, they can't drink, they can't eat, and so they dehydrate," he said. In fact, when De Rossi sees a patient with an oral yeast infection, he may suggest an HIV test, after ruling out more common causes such as taking an antibiotic for an [upper respiratory infection](#).

While mostly responsive to antifungal drugs, a few missed doses can give the fungus the opportunity to develop a protective film of sugar, called a biofilm, and become treatment resistant. "To successfully treat a yeast infection, you need a combination of some kind of host immune response and the antifungal medication," Vazquez noted.

HPV, more commonly known as a cause of cervical cancer, was actually not a significant problem in HIV patients until the advent of highly-active [antiretroviral therapy](#), said De Rossi, a study co-investigator. But once it has found a home, the virus can move quickly throughout the mouth and beyond as patients inadvertently bite the area enabling its spread. Treatment tends to work marginally and the virus often resurfaces, spreads, and can cause head and neck cancer.

"We don't know a lot about the evolution of HPV in the mouth of anybody," Vazquez added. "We have to characterize this HPV infection and how it advances in HIV patients from a state of colonization to a tiny

lesion, to a little wart, to maybe head and neck cancer that requires major surgery."

The researchers note that anyone whose immune system is compromised by disease or treatment, such as cancer patients receiving chemotherapy or radiation, may experience similar oral health concerns.

Antiretroviral, or cocktail therapies, which have been in use about a decade, have dramatically improved patient survival by inhibiting replication of HIV in all cells so that levels of infection-fighting T-cells can normalize. However, the researchers suspect it does not restore normal microbiota composition in the mouths of these patients.

Georgia Regents Health System follows about 1,800 HIV-positive patients and is adding approximately 15 newly diagnosed patients per month.

Provided by Medical College of Georgia

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