

SHANNON A lot of patients ask me how did I get this infection, and where are these organisms found? And my answer to **KASPERBAUER:** them is that they're found everywhere. They're readily a part of our natural environment. They're in the water. They're in the soil, and we all probably inhale them every day.

So it really takes a perfect storm between a vulnerable host and a pathogenic or organism to see disease in a patient. And we make great efforts to find that vulnerability in our patients, typically looking at reasons for their bronchiectasis and understanding is there's some sort of genetic, or immune deficiency, or rheumatalogic process that's contributing to that bronchiectasis. Patients often ask if there's a certain part of the country where we see greater incidence of this disease, and certainly in the data that was studied and produced from the NIH we see greater rates of disease in coastal regions. And we believe that that's related to the water vapor content in those regions, i.e. the humidity in those regions.

Other factors that we discuss with patients include their habits. So being around aerosols of water or soil- so patients that are in agricultural fields. Or if they happen to have a hot tub in their environment, or a steam shower, or wet saunas- - those are always things that we ask our patients.

So there are over 190 different species within the group of nontuberculosis mycobacteria. And we certainly do have data to say that or some species or more clinically relevant than others. But we don't really understand within, for example MAC, which organisms are more virulent. And therefore the recommendations are that we treat the organisms within MAC the same. Do not recommend that we understand to a species level within MAC which species is infecting our patients.

There is data to suggest particularly within *Mycobacterium abscessus* that different strains within *Mycobacterium abscessus* are related to greater virulence. So data out of Korea has shown that some strains are more likely to be associated with cavitary disease versus others just with bronchiectatic nodular disease, and some strains favored no progression whatsoever in patients. So I think future research needs to be done to help us understand the virulence of these organisms, which will have prognostic indications for our patients.