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Singapore proposes new holistic way of understanding infections

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Bring the scientists one step closer to developing a new way of tackling infections



An international research team led by NTU Singapore has proposed a new holistic way of understanding infections. Their study of close to 400 respiratory samples from patients with bronchiectasis, a chronic lung condition, has shown that microbes in the body exist as a network, and that an infection's severity could be a result of interactions between these microbes.

Through statistical modelling of data from these respiratory samples, the scientists found that flare-ups of coughs and breathlessness (known as exacerbations) occurred more often when there were 'negative interactions' between communities of bacteria, viruses and fungi in the airways. A negative interaction occurs when the microbes compete than cooperate with one another.

These findings, published in one of the world's leading scientific journals Nature Medicine in April, bring the scientists one step closer to developing a new way of tackling infections, by targeting microbial interactions rather than the specific microbes.

Assistant Professor Sanjay Haresh Chotirmall from the NTU Lee Kong Chian School of Medicine, who led the study, said: "Our current understanding of infections is that they occur when harmful microbes enter our bodies. This model of understanding, however, fails to account for resident microbes or explain why some patients with infection respond to antibiotics to which the microbe is resistant in laboratory testing. We are therefore proposing that microbes exist as networks, where interactions happen and that the resistant antibiotic in this case targets another microbe with which the culprit is interacting. We therefore can potentially improve clinical outcomes by breaking such crosstalk."