Research: Understanding how common respiratory viruses exacerbate the symptoms in chronic lung disease

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Disease/Condition: RSV

Respiratory syncytial virus (RSV) is a common respiratory pathogen that infects the naive lung in infancy. RSV re-infection in the elderly has been implicated in exacerbation of pre-existing chronic obstructive pulmonary disease (COPD) or asthma that is, in part, driven by increased co-infection with bacteria. How viral-induced inflammation contributes to altered anti-bacterial responses and exacerbation of underlying lung disease is not well understood.

Lung macrophages are the principal immune cells that orchestrate the maintenance of a sterile, inflammation-free microenvironment. LRRI studies determined that RSV infection alters the lung macrophage's ability to sense and respond to both host and pathogen-derived stimuli, thereby reducing their ability to generate a productive immune response and eliminate invading pathogens from the lung. These virus-induced changes in macrophage function increase the production of inflammatory mediators and therefore, may worsen underlying disease symptoms. Interestingly, the virus altered the macrophage's gene expression pattern, a blueprint that controls the cell's function. This observation suggests that future therapeutics against viral pathogens might be targeted at impairing their ability to modify expression of the host's genetic instructions.