Cystic fibrosis (CF) is a genetic disease that causes a buildup of sticky mucus, trapping microorganisms. This leads to chronic lung infections and makes breathing increasingly difficult. Patients experience lung inflammation and pulmonary exacerbations (PEs) or a point of acute health. PEs increase morbidity and decrease lung function. Although the cause of PEs is unknown, the shift in health is often attributed to changes in lung microbiota. Research has been done showing possible connections between specific bacteria and PEs. One bacteria in particular was chosen to study: *Haemophilus influenzae*. However, little research has been done on other lung microorganisms and their role in PE onset. Viruses have been detected in sputum samples from CF patients experiencing a PE. They are also found in close to 50% of patients experiencing a PE. Viral infections in CF patients are more difficult to treat. They also require more antibiotics as well as longer hospitalizations. Therefore, early detection of viruses can play a major role in prevention and decreased severity of PEs. Research has shown that bacteria can be a possible health indicator; something measurable that represents a biological state or condition. Thus, since viruses seem to have such a large impact on PEs, it is possible that they too could be an indicator of health. Two very common respiratory viruses found in CF patients, human rhinovirus (HRV) and respiratory syntactical virus (RSV), were investigated. All three target have been detected in patients with CF and in some experiencing a PE. The conditions for PCR and qPCR were optimized and patient samples were tested to detect the presence of the targets. More research needs to be done to connect the use of the three targets as biomarkers.