

## Clinical Image

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# Three layer test in bronchiectasis

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### Description

A 52 year old woman having bronchiectasis, presented to us with worsening cough which was productive with profuse, foul smelling sputum of a week's duration. A clinical diagnosis of infective exacerbation of bronchiectasis was made. She was started on antibiotics based on her previous sputum culture sensitivity reports. She was asked to collect an entire day's sputum in a transparent container which demonstrated the classical three layer sputum (Figure 1). Her high resolution CT scan of the thorax was suggestive of cystic bronchiectasis, predominantly involving the right lung (Figure 2). Some of the cysts contained fluid levels also, indicating active infection.

The three layer sputum consists of a foamy upper layer, mucous middle layer, and viscous purulent bottom layer [1]. The bottom layer consists of cell debris and sometimes Dittrich plugs may also be seen [2]. These are greyish white foul smelling masses of bacterial and fatty acid crystals, typically seen in suppurative lung disease. Her sputum grew *Pseudomonas aeu-*

*roginosa* and she responded promptly to appropriate antibiotic therapy. The three layer sputum is seldom seen in the modern era with the advent of potent antibiotics. In olden days, it used to be done as a bedside test for diagnosis of suppurative lung diseases, especially bronchiectasis.



**Figure 1:** Three layer sputum consists of a foamy upper layer, mucous middle layer, and viscous purulent bottom layer.



**Figure 2:** High resolution CT scan of thorax showing cystic bronchiectasis involving the right lower lobe.

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