

AN IMPROVED SYSTEM FOR MEASURING BREATH AND COUGH SOUNDS

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Lung sounds are influenced by the geometry and mechanical properties of the airways and lung tissue. If the characteristics of breath and cough sounds related to lung structure and function can be identified and quantified, they may assist in the diagnosis of lung disease. In order to minimize errors associated with many current techniques of measuring lung sounds, a new system consisting of a series of tubes, a microphone, a pneumotach and an anechoic termination was developed to record breath and cough sounds along with flow from the mouth. Signals were generated with a speaker and flow simulator to examine system characteristics. Tubing length, tubing type, anechoic termination type and pneumotach position were varied to find the combination that most reduced reflections. The system was used to record the respiratory maneuvers (maximal expiratory flow maneuvers and coughs) of healthy volunteers. Spectral examination of all maneuvers provided evidence of acoustical energy up to the maximal analysis frequency of 25.6 kHz. Analysis at frequencies other than those generally examined during most lung sounds investigations may provide useful information that would assist in the diagnosis of lung disease.

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