Mucociliary clearance, also referred to as mucociliary apparatus or mucociliar clearance (MCC), derived from mucus, cilia (cilia of the tracheal surface epithelium in the respiratory tract) and clearance describes the self-clearing mechanism of the bronchi.

The passage of airway in the respiratory tract that conducts air into the lungs main bronchi down to the final branchings of the respiratory tree (which act as the primary gas exchange units of the lung) alveoli are lined with a moist lining of the airway respiratory epithelium. On that, cilium is present, bearing hair-shaped structures on its surface (cilia). The cilia are surrounded by mucus, or epithelial lining fluid (ELF), the composition of which is tightly regulated; the mucus helps maintain epithelial moisture and traps particulate material and pathogens moving through the airway. and determines how well mucociliary clearance works.[2][3]:234 Within the thin fluid film of mucus the cilia act out movements coordinated in direction towards the pharynx. Thereby the viscous film of mucus including its freight is transported off in direction towards the mouth, where it is either swallowed or expelled via coughing.

Important for good mucociliary clearance are the number of cilia, their structure, activity, and coordinated movement. Optimum functionality of mucociliary clearance presupposes a temperature of 37.0 °C (98.6 °F) and an absolute humidity of 44 mg/dm³ corresponding to a relative humidity of 100%. Under the condition of insufficient temperature and humidity, after a short time the ciliary cells suspend their transport function. Under such circumstances, bacterial germinal colonization is facilitated. Pulmonary infections and damaging of the pulmonic tissues may be the consequence.

High humidity enhances the functionality of the mucociliary clearance. Two methods of supporting mucociliary clearance are the active and the passive respiratory gas humidification, which in particular are applied in mechanical ventilation.

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