

Mucociliary Clearance: Measures and Therapies

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Corresponding author: Murray Grossan, M.D., Department of ENT, Cedars-Sinai Medical Center, Los Angeles, CA 90048, USA, Tel: 1 310 659 1006; Fax: 310 858 7997; E-Mucociliary Clearance can be measured clinically with the Saccharine Test in the sino-nasal system. When

clearance is slow, treat mucus viscosity and slow ciliary beat frequency. Chronic sinusitis and bronchitis are often due to poor MCC. Therapy to upper or lower respiratory system benefits both.

In a normal, synchronous ciliary beat, the cilia are synchronous. In ciliary dyskinesia, the cilia are asynchronous. Therapy for Mucociliary Clearance includes proteolytic enzymes to reduce mucus viscosity, vibrations for improving ciliary beat frequency, irrigation with Locke-Ringer's solution for cilia frequency, glucosteroids and surfactants.

When MCC is normal, bacteria are moved out of the respiratory tracts before they have a chance to multiply. Use of the Saccharine Test can help determine toxic effects of chromium, Sulphur Dioxide, benzines and other toxic products.

When MCC is slow, mucus make up mucociliary clearance speeds up; but sinusitis may follow when mucociliary clearance slows down later.

When MCC is slow, bacteria remain in place and are able to multiply. This is a significant factor for recurrent sinus infections and indicates a method of treatment that includes restoring normal mucociliary clearance (MCC).

Measuring MCC in the lower respiratory tract is complex and includes inhalation of radioactive particles. Clinically, the results of the Saccharine test of the nasal system may be an indicator of the MCC in the lower respiratory system.

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In the studies by Workman, mechanical stimulation of airway epithelial cells causes apical release of ATP, which increases cilia beat frequency and speeds MCC. L Vs illustrated by:

- Singing “ooommm”
- Humming
- Jumping Jacks and running
- External Chest X P S L Q J
- Breathing exercises
- Special coughing
- Pulsed Irrigation
- Oropharyngeal exercises

In the respiratory system, humming at a low tone, “ooommm,” can E H Q by DW H F W C us and speeding the cilia Pulsed nasal/sinus irrigation D v H F W V

20. Lee JT, Chiu AG (2014) Topical anti-infective sinonasal irrigations: Update and literature review. *Am J Rhinol Allergy* 28: 29-38.
21. Isaacs S, Fakhri S, Luong A, Whited C, Citardi MJ (2011) H₂O v H₂O2 dilute baby shampoo on nasal mucociliary clearance in healthy subjects. *Am J Rhinol Allergy* 25: e27-29.
22. Ieto V, Kayamori F, Montes MI, Hirata RP, Gregório MG, et al. (2015) (v H₂O2) Pharyngeal exercises on snoring: A randomized trial. *Chest* 148: 683-691.
23. Pavia D, Sutton PP, Agnew JE, Lopez-Vidriero MT, Newman SP, et al. (1983) Measurement of bronchial mucociliary clearance. *Eur J Respir Dis Suppl* 127: 41-56.