Twitter Thread by Manuel Peitsch



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1/10. Several clinical trials have shown that the mean nasal mucociliary clearance is negatively and significantly affected by cigarette smoking (PMIDs: 24669080, 3787531, 23615315,

@ChaunceyGardner 2/10. Ciliary beat frequency is also significantly affected by smoking habit. A reduced nasal ciliary beat frequency was observed among smoking individuals in a cohort study performed in a British urban population (PMID: 9669071).

@ChaunceyGardner 3/10. In vitro, using human 3D epithelial cultures, cigarette smoke affects the cilia beat frequency in nasal and bronchial tissue cultures (PMIDs: 33220401, 30090531). In vivo, smoke exposure also affects cilia beat frequency in mice (PMID: 20042711).

@ChaunceyGardner 4/10. Given the consistency of these observations, and the dose response (e.g. PMID: 23615315), these mucociliary clearance-related endpoints are translational between human clinical, human in vitro and in vivo animal studies.

@ChaunceyGardner 5/10. Smoking cessation leads to an improvement of mucociliary clearance (PMIDs: 21545372, 24863424, https://t.co/BmFu2AnabI). Hence, the cilia function recovers over time following smoking cessation (as you wrote in your Tweet).

@ChaunceyGardner 6/10. Now, the important question: How does switching to a heated tobacco product or an e-vapor product affect mucociliary clearance and cilia function?

@ChaunceyGardner 7/10. In vitro, these product aerosols do not significantly affect cilia function (PMIDs: 33220401, 30090531).

@ChaunceyGardner 8/10. In humans, switching to these products leads to an improvement of mucociliary clearance similar to that following smoking cessation (https://t.co/BmFu2AnabI).

@ChaunceyGardner 9/10. Why is this important? Impaired mucociliary clearance predisposes COPD patients to exacerbations (PMIDs: 32640859, 25389352), and cessation reduces the number of these exacerbations.

@ChaunceyGardner 10/10. Similar to cessation, switching to an e-vapor (PMID: 33101622) or heated tobacco product (https://t.co/LhS1PP3GMt; https://t.co/X9IIN4HfWK) reduces the number of exacerbations and improves the patients' CAT score.