

## A novel smartphone-based point-of-care diagnosis of cystic fibrosis

Cystic fibrosis (CF) is caused by a defect in the cystic fibrosis transmembrane conductance regulator (*CFTR*) gene of cells in the lungs, pancreas and sweat glands. The gold standard for the diagnosis is a sweat chloride concentration of >60 mmol/L. Current diagnostic markers are expensive, and low-cost chloridometers are required for diagnostic and monitoring purposes.

A team in Pennsylvania have developed a low-cost smartphone chloridometer equipped with an ultraviolet LED to generate fluorescence signals that are captured by the smartphone camera. This can detect chloride concentrations of 0.8 - 200 mmol/L. This test has a high sensitivity, and has undergone both analytical and clinical validation with both CF and non-CF individuals, albeit in small numbers of participants. Its clinical value will be its use as a predictive pharmacological biomarker of pulmonary improvement

and compliance in CF patients. This unique testing platform has the potential to offer real access to point-of-care diagnosis and management of CF patients in resource-limited settings in developing countries.

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## The relationship between low vitamin D levels and asthma is still an enigma

The interaction between vitamin D and clinical course in asthma pathogenesis is an active area of research presently. A previous systematic review on maternal vitamin D and childhood asthma, wheeze and eczema showed no correlation between low maternal vitamin D levels and childhood wheeze and asthma.<sup>[1]</sup> A new systematic review and meta-analysis of observational studies was performed to evaluate the prevalence of vitamin D deficiency in asthmatic children.<sup>[2]</sup> A total of 23 studies (with 13 160 participants) were analysed. The association with asthma incidence, asthma control, and lung function was determined. The mean vitamin D levels were lower in asthmatics v. non-asthmatics; however, there was a poor correlation between vitamin D levels and incidence of asthma, with one study showing an inverse association at 4 years, and no association with asthma severity at 8 years. There was also a poor correlation with lung function tests between low levels of vitamin D and asthma control.

There is a need for further well-randomised, controlled trials in children before we decide whether asthmatic children can benefit from vitamin D supplementation, or not.

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