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# Free-breathing MRI for monitoring ventilation changes following antibiotic treatment of pulmonary exacerbations in paediatric cystic fibrosis

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The work was carried out using REB and Health Canada-approved protocols at the Hospital for Sick Children (clinicaltrials.gov: NCT02740868, for PEX participants, and NCT02606487, for healthy volunteers). Individual participant data will not be shared.



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**Ventilation distributions obtained with PREFUL MRI correlated with Xe-MRI, and both could detect improvements following treatment of a PEX. PREFUL MRI offers an effective and more widely available alternative to Xe-MRI for monitoring treatment.** <https://bit.ly/3le0TT9>

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## To the Editor:

Treatment response in cystic fibrosis (CF) is traditionally monitored using pulmonary function tests (PFTs), such as spirometry. However, PFTs can be insensitive to treatment, particularly in early CF lung disease [1]. Hyperpolarised xenon-129 magnetic resonance imaging (Xe-MRI) has been shown to be feasible in children [2], more sensitive to early CF lung disease compared to PFTs [3] and captures improvements in ventilation inhomogeneity in paediatric CF patients receiving intravenous antibiotic treatment for a pulmonary exacerbation [4]. However, access to hyperpolarised <sup>129</sup>Xe gas is not widely available, and Xe-MRI requires subjects to perform an extended breath-hold (10–15 s), which is challenging for very sick children.