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**Title:** Correlation between volumetric CT scans and lung function in lower respiratory tract infection

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**Body:** Computed tomography(CT) is currently the gold standard to monitor lower respiratory tract infection(LRTI), however CT is expensive and involves considerable doses of radiation which prevents monitoring patients with the required frequency. As spirometry is a simple procedure that measures inhaled and exhaled volume of air as a function of time, it may have potential to overcome some of these difficulties. This study aimed to explore the correlation between spirometry and CT parameters in LRTI. Volumetric CT was performed in 34 outpatients with LRTI using a 64 MultiDetector CT. Tracheobronchial tree and lung parenchyma were segmented with Region Growing technique and Morphological Operations to obtain tracheobronchial and bronchial(left and right) trees and lung parenchyma volumes(LPV). Forced expiratory volume in the 1<sup>st</sup> second percentage predicted(FEV1pp), forced vital capacity percentage predicted(FVCpp) and FEV1/FVC ratio were also collected. Correlations were explored with Pearson's Correlation(PASW 18.0). Participants'(47.1% males) mean age was 52.7±18.9y. Tracheobronchial tree volume correlated significantly with FEV1pp( $r=0.357$ ,  $p=0.038$ ) and FVCpp( $r=0.369$ ,  $p=0.032$ ). Left and right bronchial tree volumes also correlated significantly with FEV1pp( $r=0.514$ ,  $p=0.02$  and  $r=0.507$ ,  $p=0.02$ , respectively) and FVCpp( $r=0.503$ ,  $p=0.002$  and  $r=0.436$ ,  $p=0.010$ , respectively). Regarding the FEV1/FVC ratio, a negative and significant correlation with LPV was found( $r=0.385$ ,  $p=0.025$ ). These findings suggest that spirometry should not be used alone to monitor LRTI as correlations found were mainly moderate. Further research is needed to explore other non-invasive measures, e.g., respiratory sound analysis.