Ventilation Report
CT LVAS™

Scan ID: FLASH.10031
Date Received: 01-AUG-2024 UTC
Date Prepared: 01-AUG-2024 01:59:43 UTC
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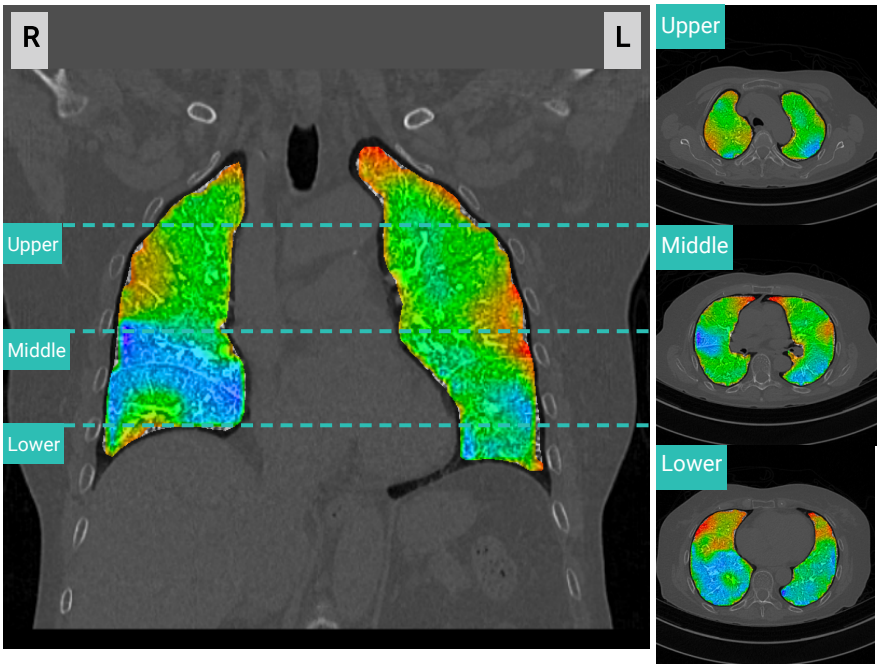
The regional measures within this report are derived entirely from the lung tissue displacement and lung volume change between the paired inspiration-expiration chest CTs.

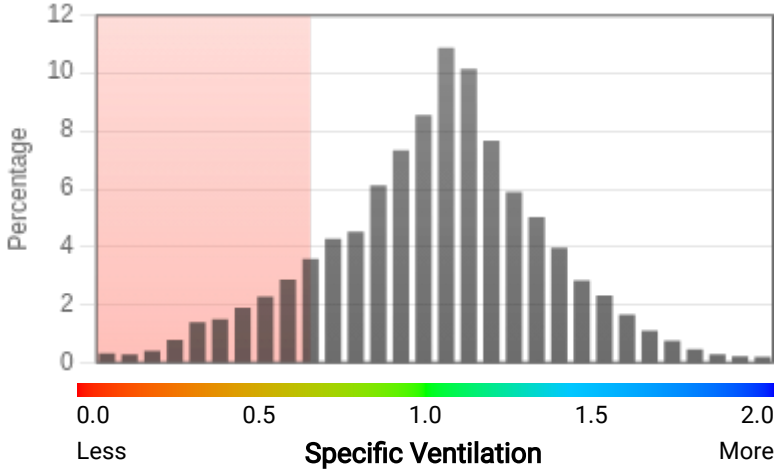
Ventilation Report - Report Summary

Regional Ventilation Visualization



Ventilation Distribution Graph/Histogram

The frequency distribution of regional specific ventilation measured across the entire lung at peak inspiration.



Lung Volumes

4.5 L	2.5 L	2.0 L
Inspiration Volume	Expiration Volume	Change In Volume

VDP $_{\Delta V}$

12.4 %

Ventilation Heterogeneity $_{\Delta V}$

26.8	39.9	24.2
Small Scale	Total	Large Scale

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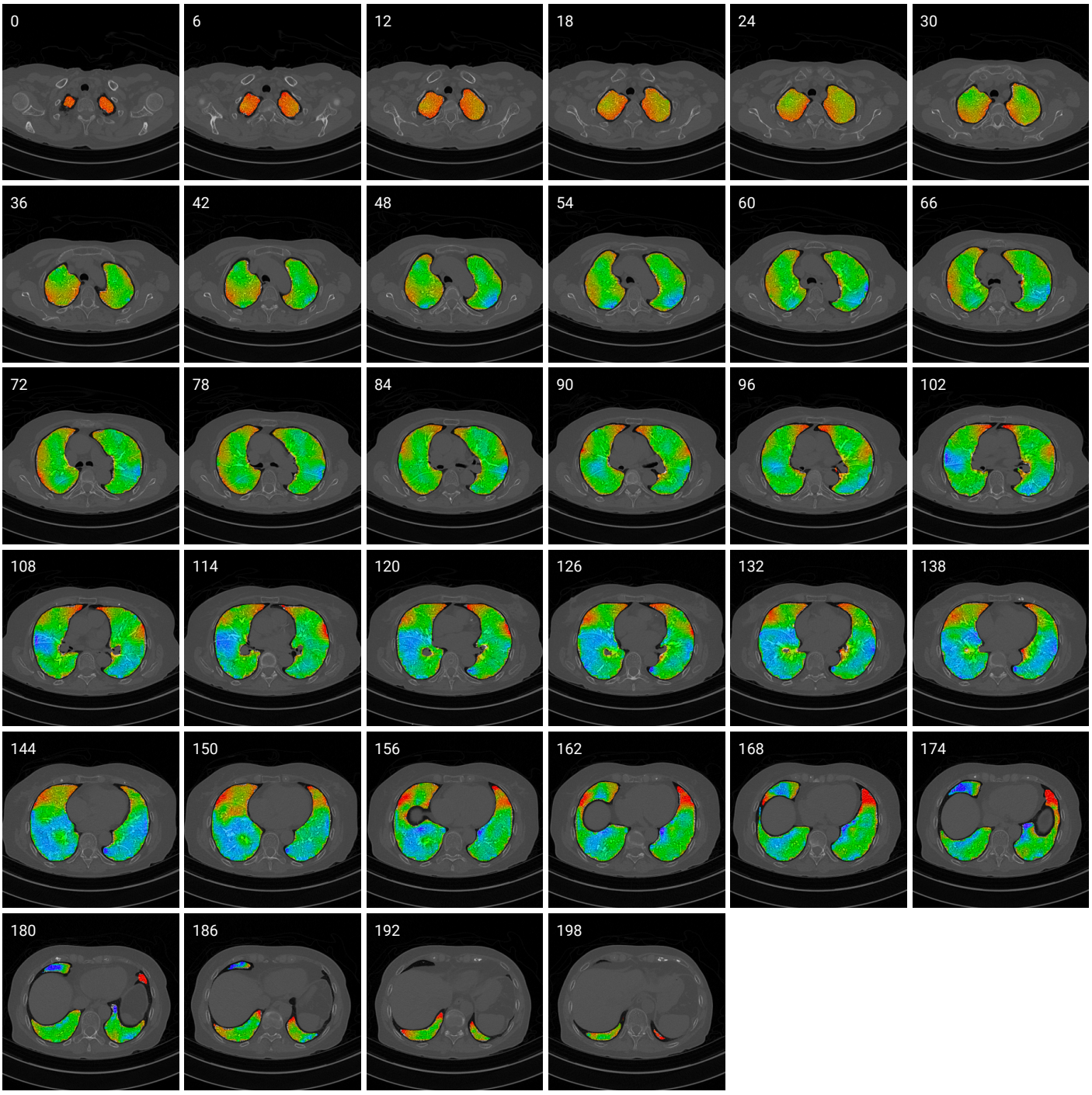
Regional Ventilation Visualization - Axial Slices

Axial (Transverse) Plane - Every 6 mm



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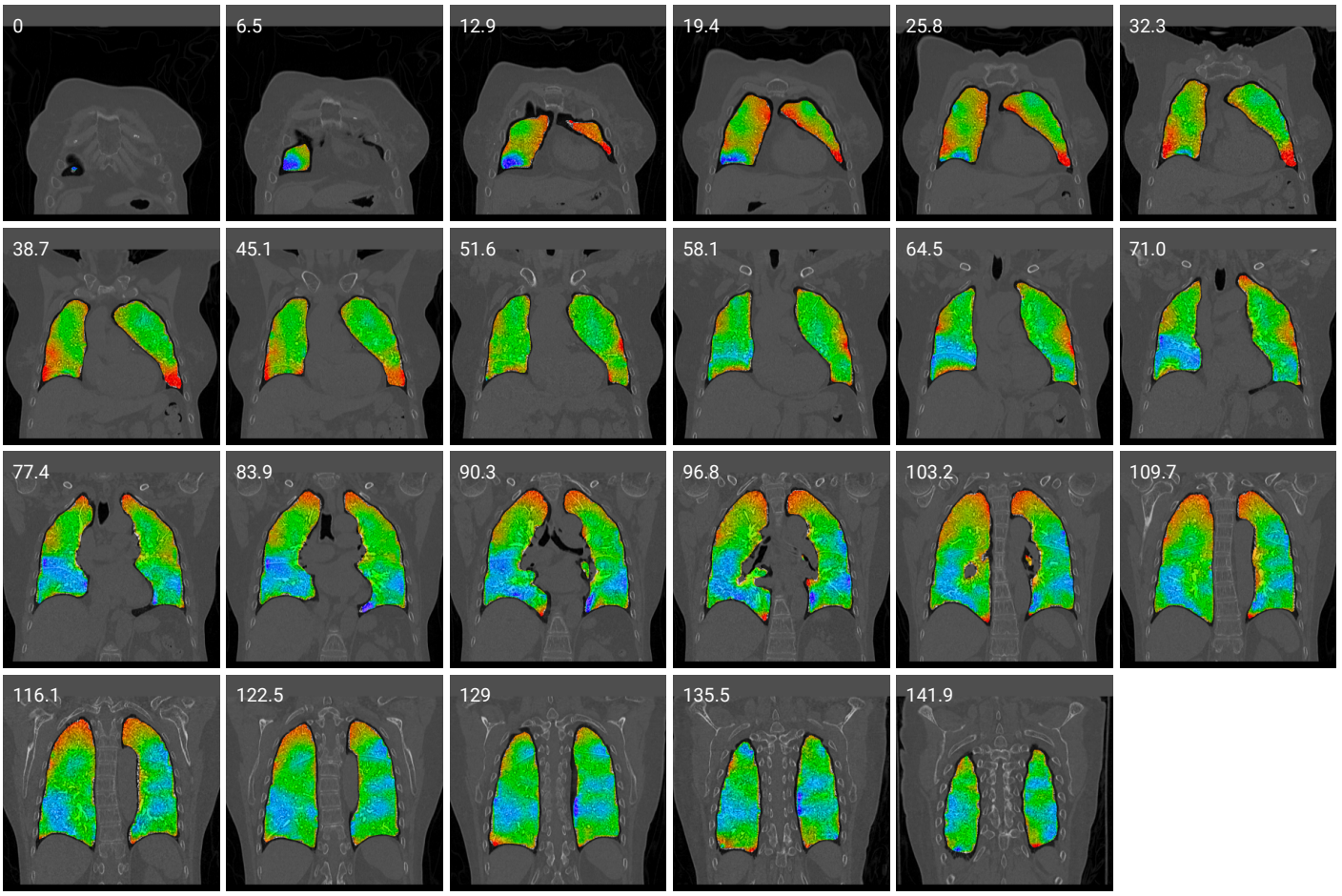
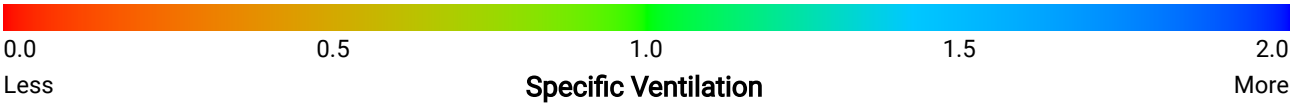
Regional Ventilation Visualization - Coronal Slices

Coronal (Transverse) Plane - Every 6.45 mm





How To Read The CT LVAS Ventilation Report

Regional Ventilation Visualization

The Regional Ventilation Visualizations indicates, through color, regional specific ventilation at deep inspiratory breath-hold for a mid-coronal slice and three (3) axial slices (Upper, Middle, Lower). Ventilation values are normalized by the mean specific ventilation. Red depicts regions of relative low ventilation, green depicts regions of average ventilation and blue depicts regions of relative high ventilation.

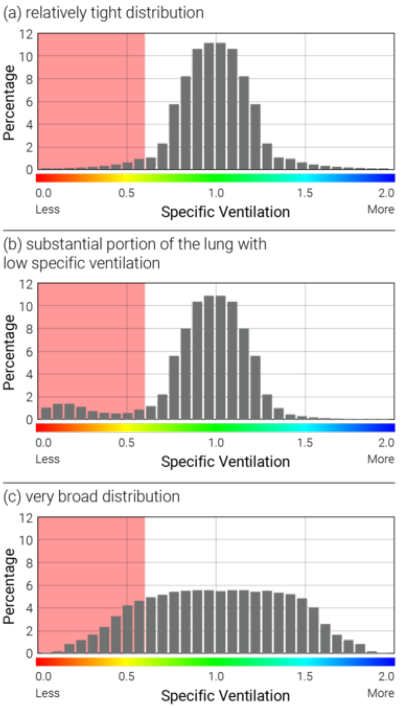
Measurements are only provided for the regions that have been captured in the CT images. (i.e. areas not imaged do not contribute to the measurements).

Specific ventilation is the ratio of the volume of a region of lung divided by the volume at start inspiration. Presented values are normalized by the mean specific ventilation of the patient.

Ventilation Distribution Graph/Histogram

The Ventilation Histogram provides the frequency distribution of regional specific ventilation measured across the entire lung, at deep inspiratory breath-hold. Ventilation values are normalized by the mean specific ventilation. The Ventilation Histogram summarizes the information contained in the Regional Ventilation Visualizations. It includes the Ventilation Defect Percentage (VDP), which is the percentage of ventilation data points below 60% of the mean specific ventilation. The low specific ventilation range has a colored background to highlight the data points that are included in the VDP value. An increased VDP indicates a larger proportion of the lung volume with low ventilation. Illustrative histogram (a) shows a histogram having a relatively tight distribution (most of the lung volume on or close to the average ventilation), resulting in a low Total Ventilation Heterogeneity and a low VDP. Illustrative histogram (b) shows a histogram having a significant portion of the lung with low specific ventilation, resulting in an increased VDP (compared to (a)). Illustrative histogram (c) shows a histogram having a very broad distribution, resulting in an increased Total Ventilation Heterogeneity.

Histogram Examples



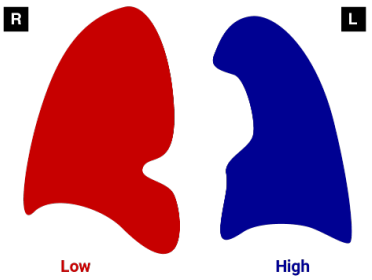
Ventilation Heterogeneity

Ventilation Heterogeneity quantifies the regional variability of the ventilation. The measure is the ratio of the interquartile range to the mean of the specific ventilation. Low Ventilation Heterogeneity values are associated with uniform ventilation throughout the lung, while high Ventilation Heterogeneity values represent significant variability in the lung. Ventilation Heterogeneity is widely published as a recognized indicator of lung health. The Ventilation Heterogeneity is presented as three indices: Total: the overall value of heterogeneity, calculated using all regional specific ventilation data (as displayed in the Regional Ventilation Visualizations). Small scale: the degree of heterogeneity within local regions of the lung (e.g. alveolar to lobar size), calculated after first filtering out large scale variations (i.e. scales larger than 64 mm / 2.5”). Large scale: the degree of heterogeneity within larger regions of the lung (e.g. lobar and larger), calculated after first filtering out small scale variations (i.e. scales smaller than 64 mm / 2.5”).

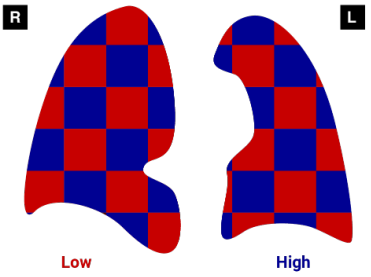
Illustrative visualization (a) shows a variation between the right and left lungs, and (b) shows a checkerboard variation. Case (a) results in a high Total Ventilation Heterogeneity, a high Large Scale Ventilation Heterogeneity, and a low Small Scale Ventilation Heterogeneity. Case (b) results in a high Total Ventilation Heterogeneity, a high Small Scale Ventilation Heterogeneity, but a low Large Scale Ventilation Heterogeneity.

Visualizations

(a) shows a variation between the right and left lungs



(b) shows a checkerboard variation



Lung Volumes

Volume Change - the difference in the volume (L) between deep inspiration and deep expiration. Inspiration Volume - total volume (L) of lung tissue at end inspiration. Expiration Volume - total volume (L) of lung tissue at end expiration.

Regional Ventilation Visualization Slices

The Regional Ventilation Visualizations (Axial and Coronal Slices) indicates, through color, regional specific ventilation at peak inspiration. Ventilation values are normalized by the mean specific ventilation. Red depicts regions of low ventilation, green depicts regions of average ventilation and blue depicts regions of high ventilation.

Contact 4DMedical

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Disclaimer: The Report provides information to support physicians with their assessment of patients with lung diseases. The Report does not, in itself, provide a diagnosis of lung health. 4DMedical assumes no responsibility for the improper use of, or self-diagnosis using, the Report.

Please see the Instructions for Use for a fuller explanation of all concepts in this Report.