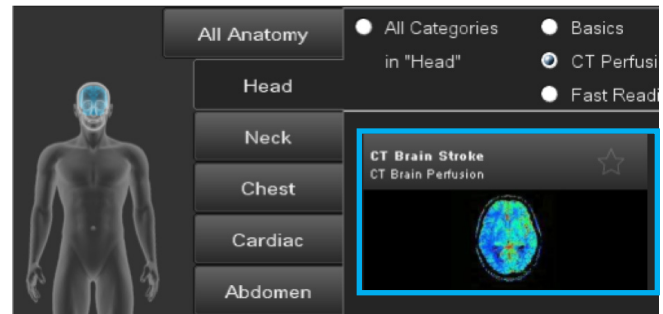
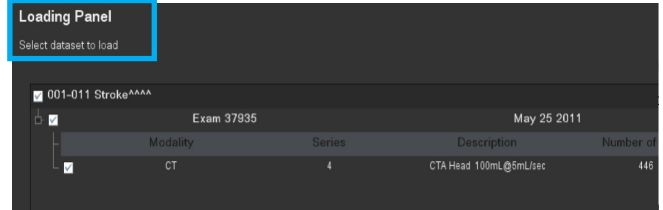


CT Perfusion 4D-Brain Stroke

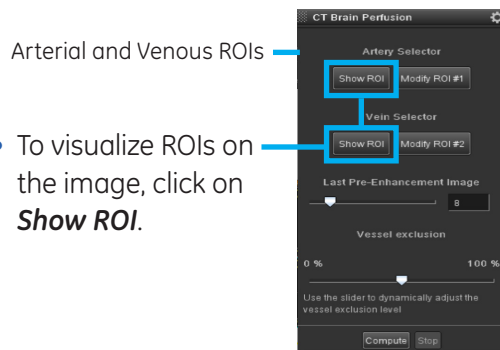
VolumeShare 7 • Quick Reference Guide

CT Perfusion 4D will aid in the assessment of the extent and type of perfusion, blood volume and capillary permeability changes, which may be related to stroke or tumor angiogenesis and the treatment thereof.

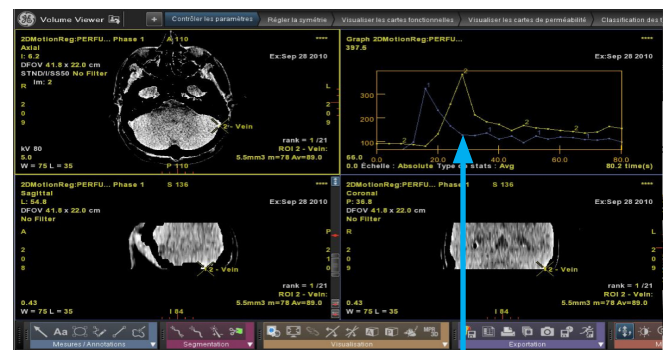
- Load perfusion series in Volume Viewer OR CT Perfusion 4D, and select **CT Brain Stroke**.



- The software will remove bone, register all phases and preselect arterial and venous inputs.

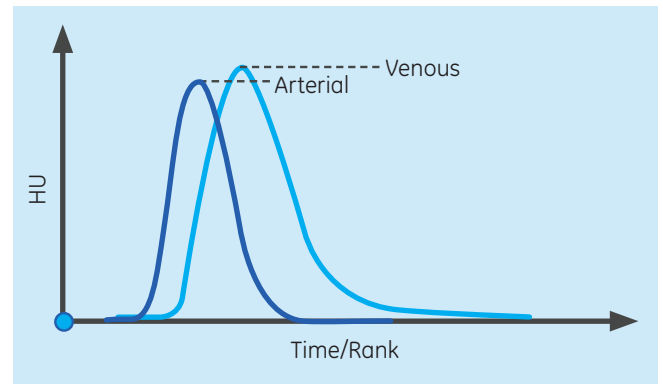


- To visualize ROIs on the image, click on **Show ROI**.



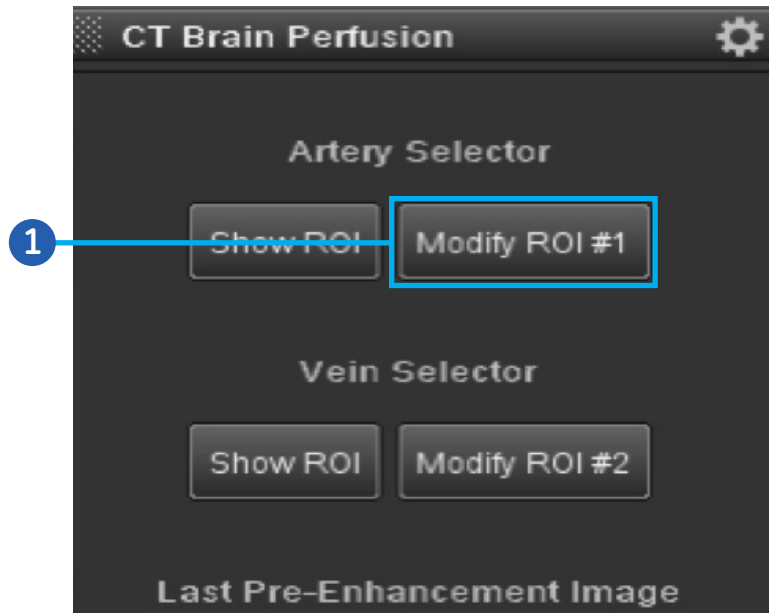
Arterial and Venous curves

- Both arterial and venous curves should appear as smooth as possible. The arterial peak should be reached before the venous peak.
- Both inputs ROIs should only include blood/contrast signal, no artifacts nor partial volume, which might tamper with the curves and therefore, with the maps.
- Do not hesitate to check and edit ROIs, if necessary.

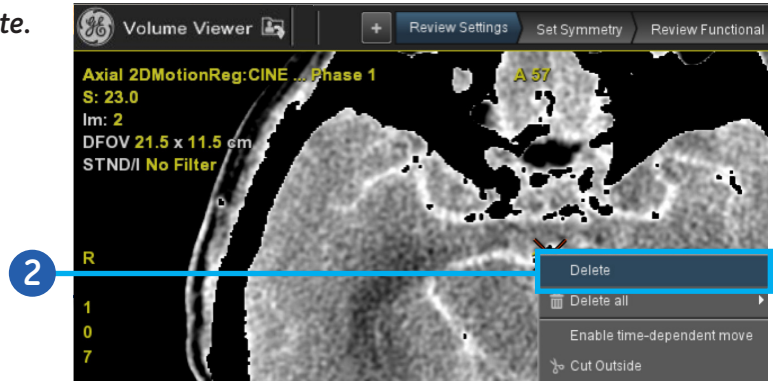


To modify ROIs :

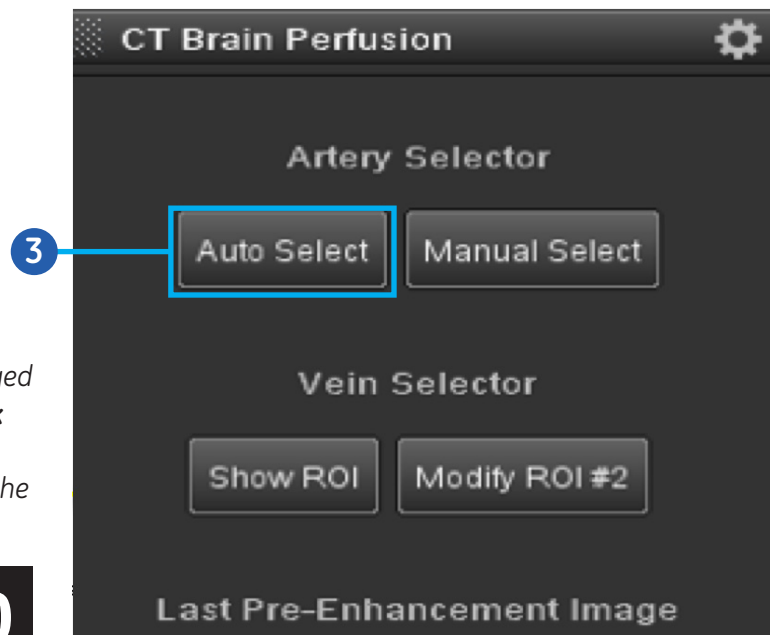
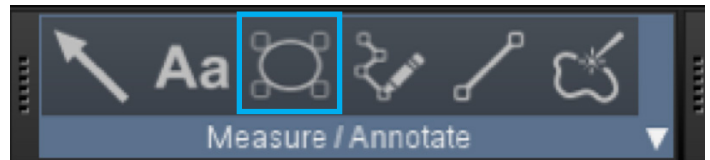
1. Click on **Modify ROI #**.



2. Then right click on the **ROI/Delete**.



3. Generate another ROI and place it, then select **Auto Select**.

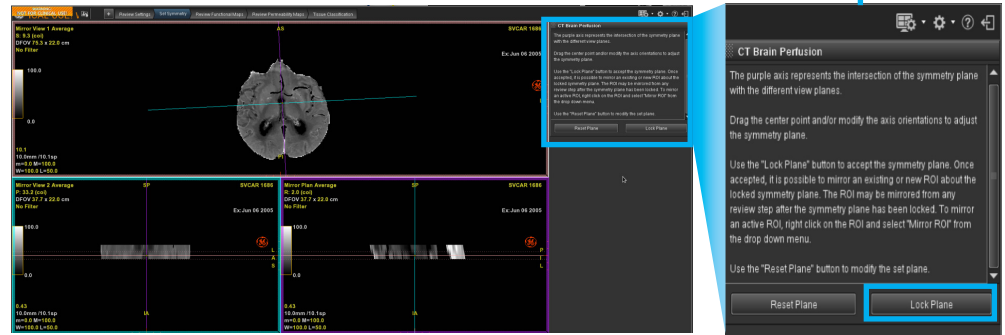


Note: Rank displayed can be changed by right clicking on the **yellow rank annotation** on image OR by left clicking on the curves and moving the mouse from left to right.

rank = 10 /20

Follow review steps :

1. Set Symmetry and lock plane (ONLY on axial view).

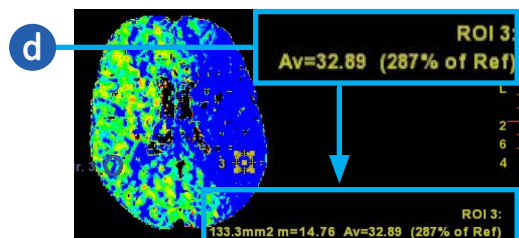
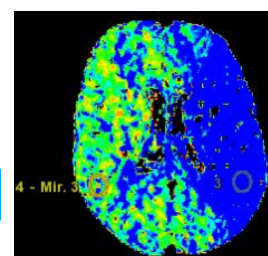
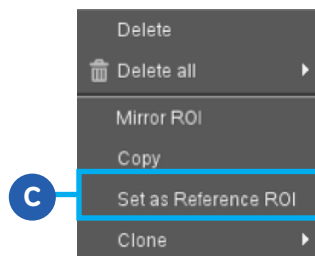
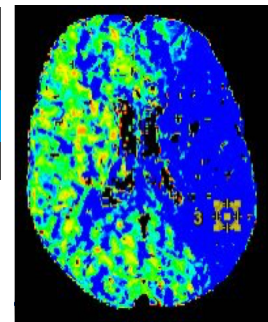
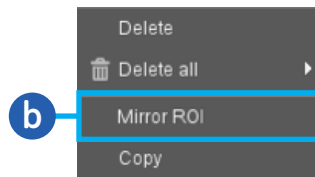
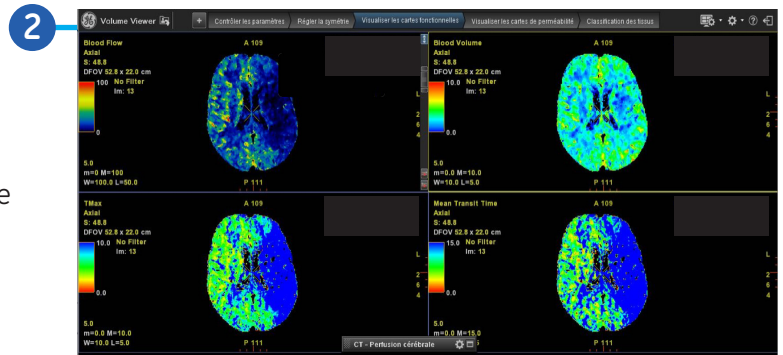


2. Review Functional Maps.

Default display allows to simultaneously display Blood Flow (BF), Blood Volume (BV), TMax, and MTT maps, which are computed by deconvolution using Johnson-Wilson model, just like *IRF T0*, and *PS*.

To obtain a ratio between two areas of interest:

- a. Create an ROI.
- b. Right click on it and **Mirror ROI**.
- c. On this new ROI, right click and **Set as Reference ROI**.
- d. Go back to the initial ROI to get the ratio.

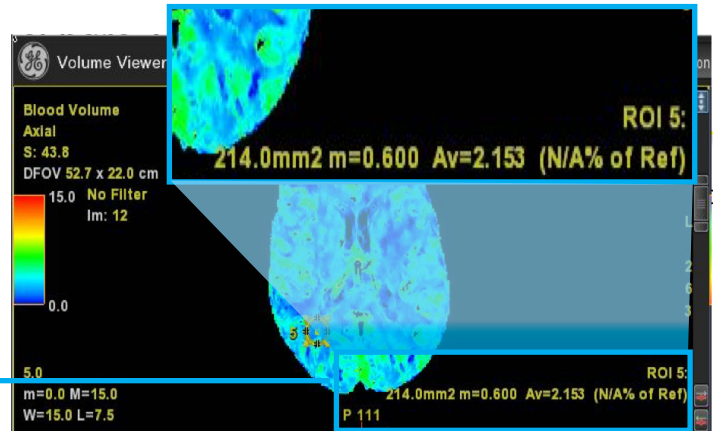


3. Tissue Classification.

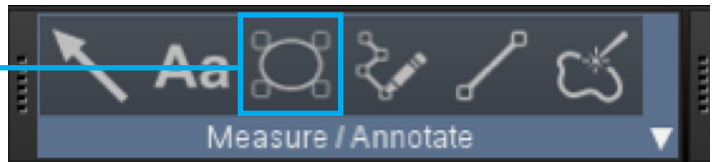
The optimal approach to define the infarct and the penumbra is a combined approach using two Perfusion CT parameters: relative Mean Transit Time (MTT) and absolute Cerebral Blood Volume (CBV), with dedicated thresholds (MTT: 145% of normal or 7s, CBV: 2.0 ml $\times 100 \text{ g}^{-1}$ or 60% of normal)¹

To obtain core and penumbra segmentation:

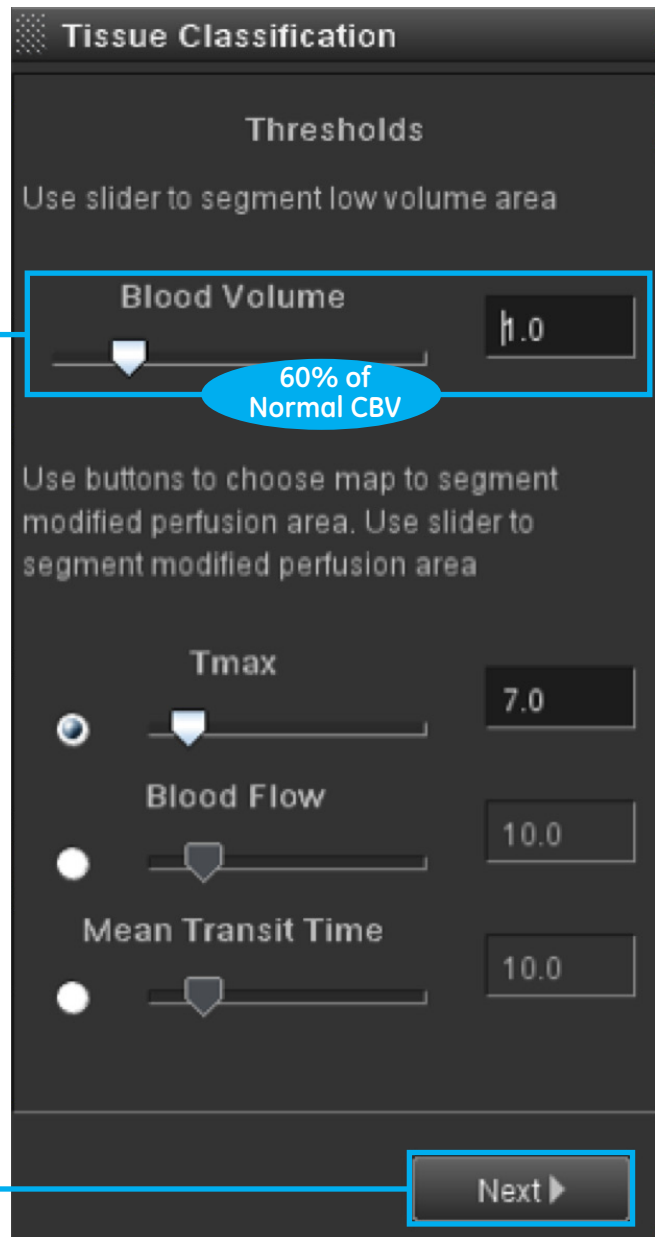
- Create an ROI on CBV map in normal area.
- Report 60% of normal BV value in **Blood Volume** field.
- Select **Next**.



3



a

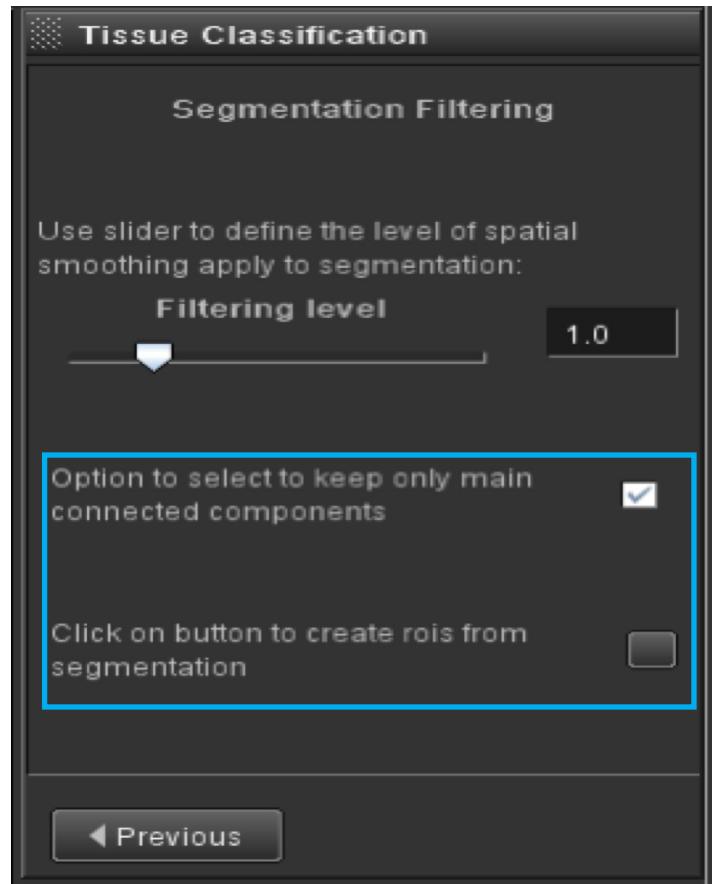


b

c

To filter the core and penumbra segmentation:

1. Check *keep only main connected components* and *create ROIs from segmentation*.
2. Right click on new ROI and *Mirror ROI*.



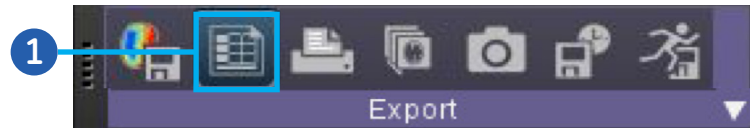
The optimal approach to define the infarct and the penumbra is a combined approach using two Perfusion CT parameters: relative Mean Transit Time (MTT) and absolute Cerebral Blood Volume (CBV), with dedicated thresholds (MTT: 145% of normal or 7s, CBV: 2.0 ml x100 g-1 or 60% of normal)¹

	MT	CBF	CBV
Healthy Parenchyma	=	=	=
Penumbra	↑↑	↓	↑ or =
Core	↑↑↑	↓↓	↓

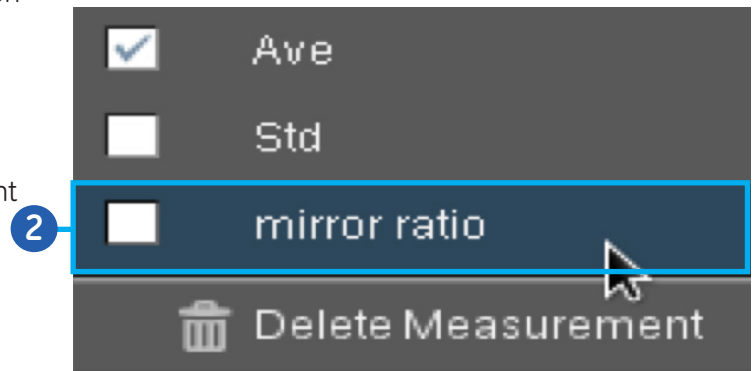
1 Wintermark, M., et.al (2006) Perfusion-CT Assessment of Infarct Core and Penumbra. Stroke, 37, 979-985.

Edit a report including functional maps and ROIs values:

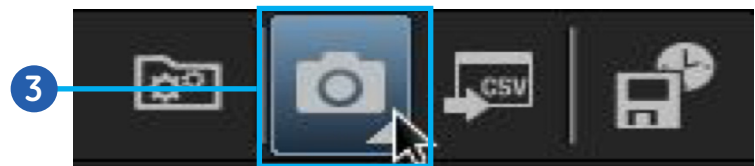
1. Once classification is done, click on **Summary Table**.




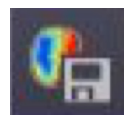
2. On Low BV and/or penumbra, right click and check **mirror ratio**.



3. Click on the **camera** to export data to the filmer.

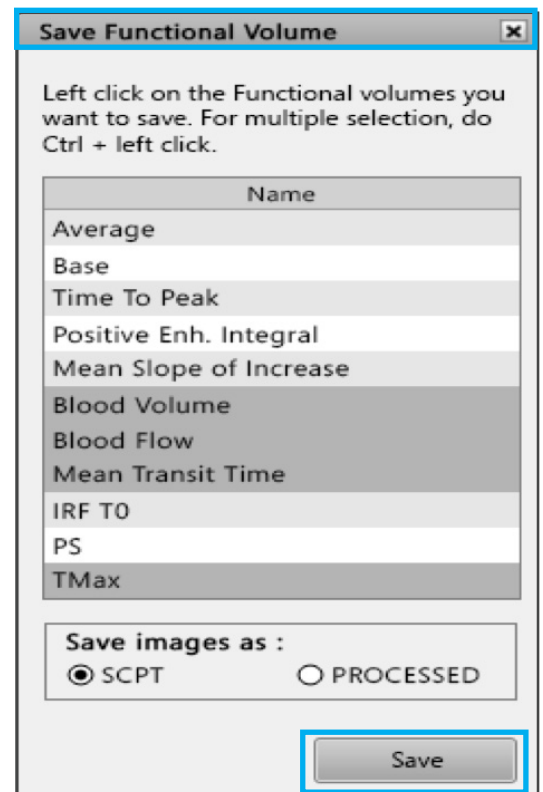


You may also use the **Save Functional Volume**  icon to save functional maps as **processed images**, or as **secondary captures (SCPT)** for colored maps (no measurement possible on SCPT).



Save Functional Volume Icon

Select **Functional Volume(s)** to save and click on **Save**. They will appear as new series in the Patient List.



WARNING! To assure an efficient and safe use of Volume Viewer Apps, it is essential for you to read the User Guides and the Customer Release Notes before attempting to start. The entire documentation is available on your system. Make certain that your documentation is readily available at all times. You shall under no circumstances use Volume Viewer Apps if the documentation is not available. If you need help, please contact the Online Center.

GE, and the GE Monogram are trademarks of General Electric Company.