



Automated Volumetric Imaging Solutions

FDA cleared, CE marked, and Canada, South Korea,
Australia, and Brazil approved



Why Use CorTechs Labs Products?

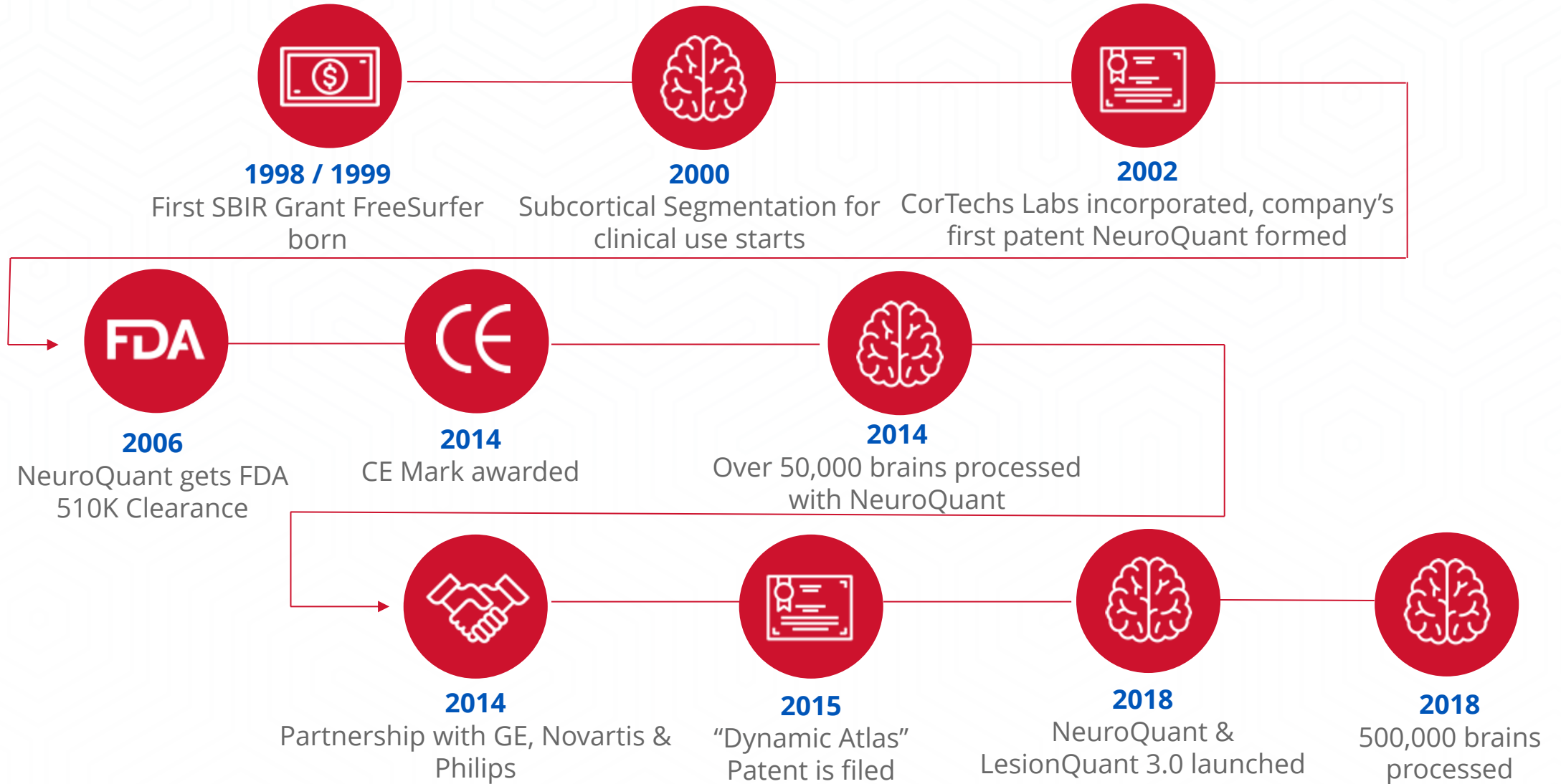


FIRST FDA CLEARED SOFTWARE
FOR VOLUMETRIC MRI PROCESSING

Recognized Industry leader with over 10 years of trusted, accurate and proven automated brain image analysis

- 1 Ready for clinical use in the USA, Canada, Europe, Australia, South Korea, and Brazil
- 2 Used in over 800 clinical institutions worldwide
- 3 Over 500,000 brains processed in research and clinically
- 4 Consistent segmentation for ages 3 to 100
- 5 Trusted and verified by leading hospitals, universities, radiology centers, and Department of Defense
- 6 Compatible with leading MRI manufacturers

Key Milestones



Proven and Trusted

Used by the world's leading institutions



Used in over 800 clinical institutions in 35 countries worldwide



NeuroQuant 3.0



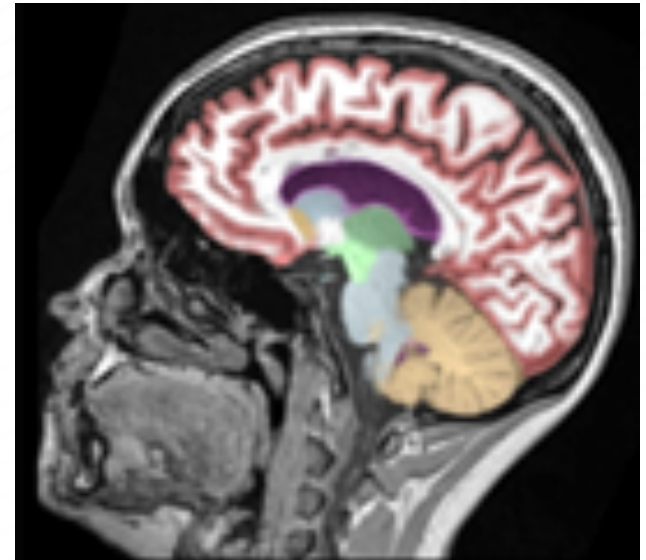
What is NeuroQuant?



FIRST FDA CLEARED SOFTWARE
FOR VOLUMETRIC MRI PROCESSING

Provides Automatic Image Segmentation
from Magnetic Resonance Imaging (3D T1 MRI)

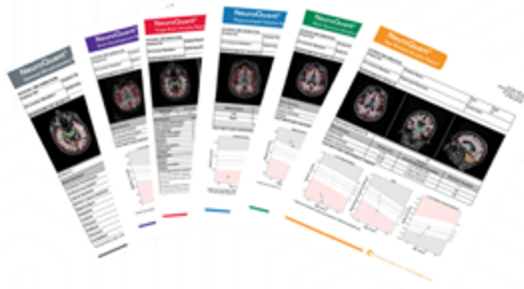
- 1 Registers Image to Dynamic Atlas
- 2 Identifies and Labels Anatomical Structures
- 3 Quantifies the Volumes of Brain Structures
- 4 Compares them to a Unique Normative Database for ages 3-100



NeuroQuant[®] - Atrophy, Quantified.

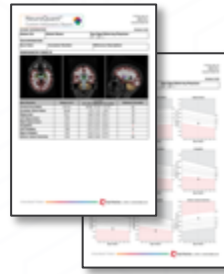
Fast, accurate & proven automated brain image analysis.

Comprehensive Volumetric Reports



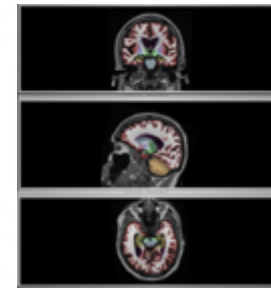
Six standard reports provide supplemental volumetric data in the assessment of neurological diseases

Custom Volumetric Reports



An alternative to standard NeuroQuant Reports, users can create custom volumetric reports relevant to clinical needs

Color Coded Brain Segmentation



A color overlay of the 3D MR images enabling closer inspection on a PACS or other DICOM viewer

Exportable CSV File with Raw Data



CSV File with extensive data for research needs

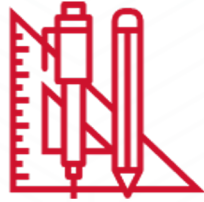
NeuroQuant in Clinical Practice



RECOGNIZED BIOMARKER

Quantitative volumetric imaging is used to aid the evaluation of neurodegeneration

Provides supportive evidence for detecting tissue damage and pathology



OBJECTIVE MEASUREMENT

Measuring brain atrophy allows physicians to better evaluate patient cognitive complaints



ADDITIONAL DATA

This helps the physician assess overall clinical impression

Triggers additional workup for curable conditions when data are not suggestive of neurodegeneration

Accurate and early diagnosis guides clinical decisions

Effective education and management for the patient, caregiver, and family

Source: McEvoy, L.K. & Brewer, J.B. (2012). Biomarkers for the clinical evaluation of the cognitively impaired elderly: amyloid is not enough. *Imag. Med*, 4(3), 14.

Benefits of NeuroQuant



SAVES TIME

Increase productivity with automated quantification of brain MRIs in minutes with no user intervention.



IMPROVE ACCURACY

Automatic comparison to normative database reveals brain structure volumes divergent from the normal population. Ages 3-100.



MINIMIZE SUBJECTIVITY

Removes variability inherent in manual quantification methods.



SAVE MONEY AND REDUCE COSTS

Reduce radiologist workload by automating the segmentation and volumetrics.

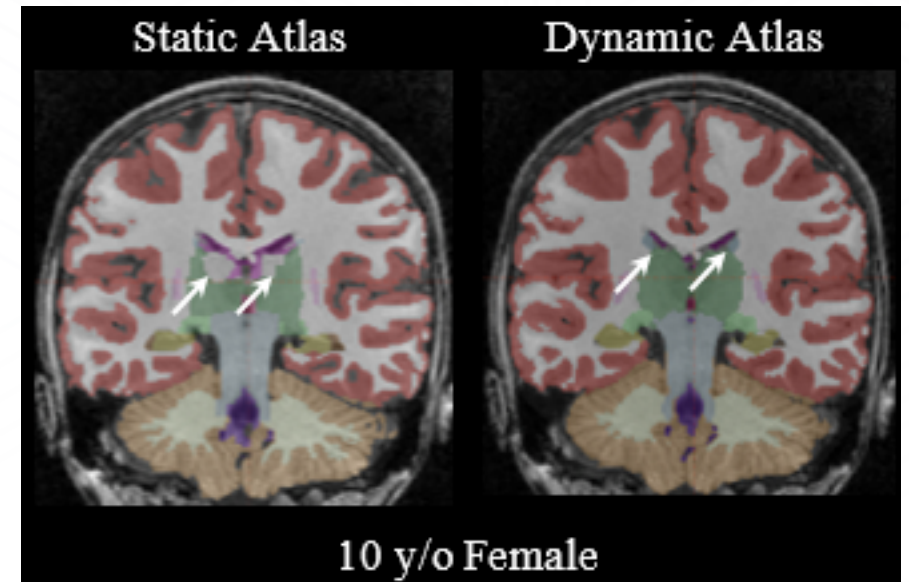


OVER 500,000 NEUROQUANT REPORTS HAVE BEEN GENERATED FROM MORE THAN 800 NATIONAL AND INTERNATIONAL INSTITUTIONS.

Unprecedented Accuracy for Ages 3 -100

Dynamic Atlas™ - Personalized segmentation driven by advanced precision technology

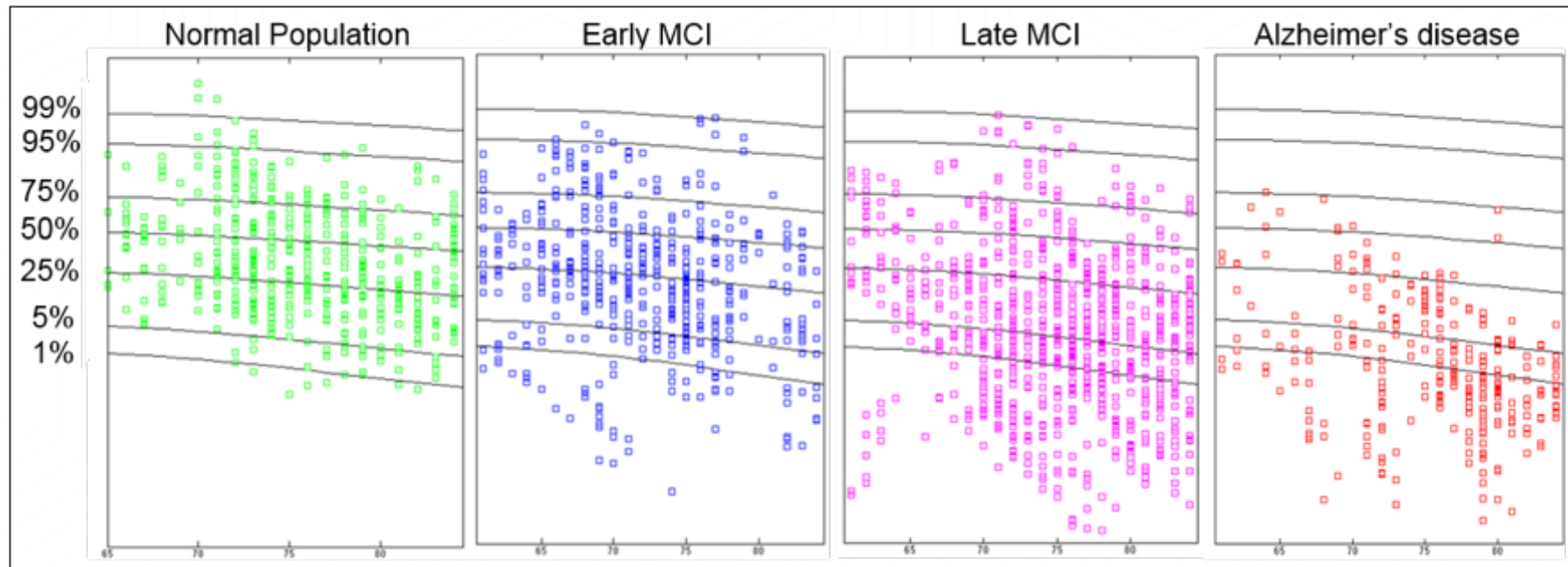
- ✓ Personalized atlas of each patient's brain versus static atlas
- ✓ Accurate and consistent brain segmentation in all subjects, independent of age and sex
- ✓ Highly reproducible and robust quantitative volume assessment of brain regions
- ✓ Longitudinal evaluation of patient data without discontinuity
- ✓ Greater scan-to-scan precision for longitudinal follow-up



NeuroQuant Normative Database

Patient brain volume results compared with thousands of healthy cohorts based on age and sex

- ✓ Continuous normative values from 3 to 100 years
- ✓ Verified and validated for over 10 years
- ✓ Used with more than a hundred thousand clinical cases



Sample Order from Referring Physician

Imaging Request
Please bring this form, your insurance card and Photo ID with you on the day of your exam.

Date: _____
Appointment Date: _____ Appointment Time: _____
Patient Name: _____ Date of Birth: _____
Clinical History/Reason for Exam: _____
Referring Physician: _____ Signature: _____
Phone: _____ Fax: _____ Patient to bring images to doctor Call in STAT results
Bun: _____ Creatinine: _____ Lab Date: _____

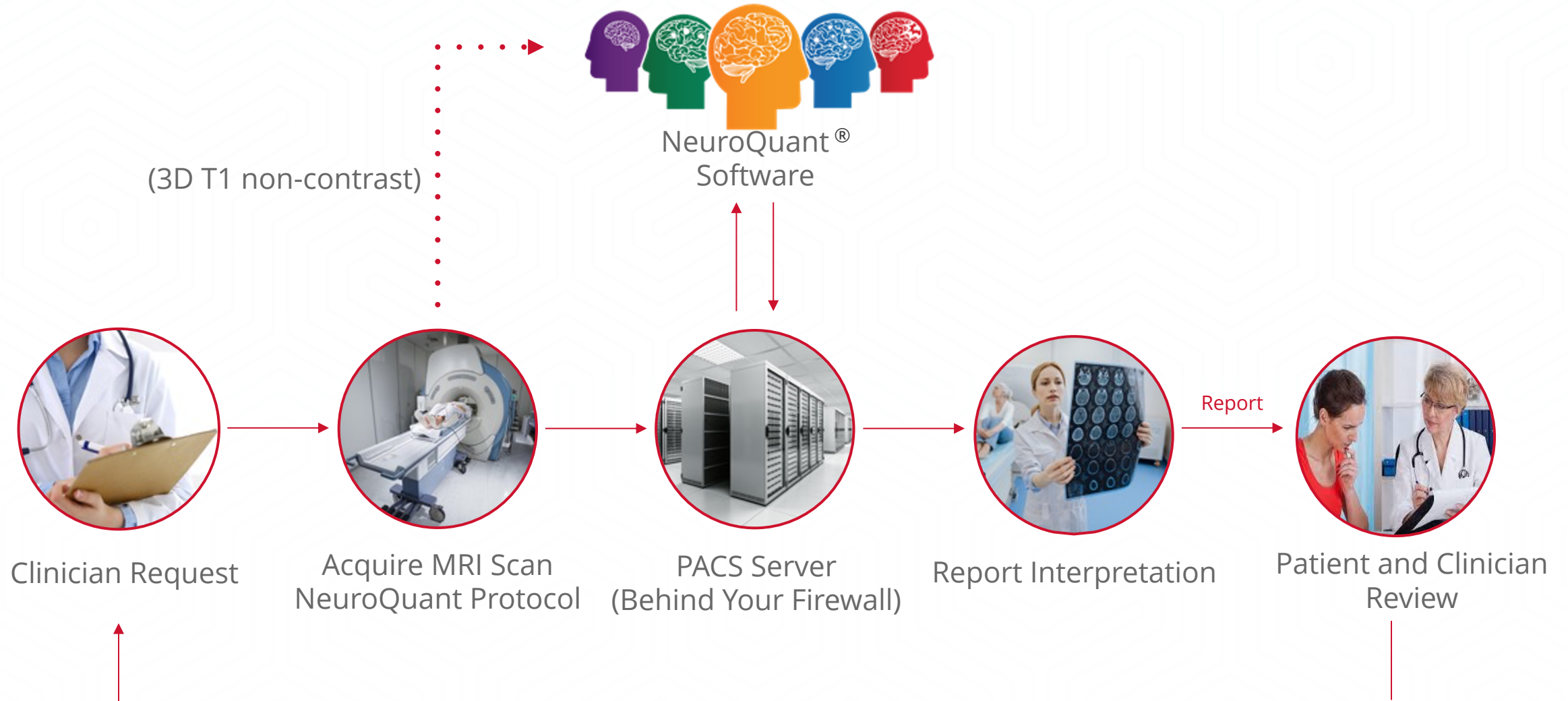
MRI <i>Contrast as indicated 3D Rendering as indicated Orbit X-Ray as indicated MRI without contrast:</i>	CT <i>Contrast as indicated 3D Rendering as indicated</i>	PET/CT	Nuclear Medicine
<input checked="" type="checkbox"/> Brain <input type="checkbox"/> w/special attention to IAC <input type="checkbox"/> w/special attention to Pituitary <input checked="" type="checkbox"/> NeuroQuant <input type="checkbox"/> Orbits <input type="checkbox"/> TMJ <input type="checkbox"/> Neck (soft tissue) <input type="checkbox"/> Spine: ___ cervical ___ thoracic ___ lumbar <input type="checkbox"/> Extremity:	<input type="checkbox"/> Brain <input type="checkbox"/> Orbits <input type="checkbox"/> IAC Middle Ear <input type="checkbox"/> Sinus <input type="checkbox"/> Facial Bones <input type="checkbox"/> Dental <input type="checkbox"/> Neck <input type="checkbox"/> Spine: ___ cervical ___ thoracic ___ lumbar <input type="checkbox"/> Extremity:	Primary cancer site(s) _____ Metastatic cancer site(s) _____ Diabetic: ___ Yes ___ No <input type="checkbox"/> Alzheimer's <input type="checkbox"/> PET/CT, skull base to mid-thigh <input type="checkbox"/> PET/CT, whole body <input type="checkbox"/> PET/CT, sodium fluoride	<input type="checkbox"/> Abscess (inflammatory) localization <input type="checkbox"/> Bone: ___ whole body ___ 3-phase <input type="checkbox"/> Thyroid (diagnostic) <input type="checkbox"/> Thyroid (therapeutic, I-131) <input type="checkbox"/> Parathyroid <input type="checkbox"/> Myocardial Perfusion (heart) <input type="checkbox"/> MUGA (cardiac blood pool) <input type="checkbox"/> Lung <input type="checkbox"/> Liver or Liver/Spleen <input type="checkbox"/> Gallbladder (HIDA) <input type="checkbox"/> Renal: ___ Captopril ___ Lasix <input type="checkbox"/> Tumor Localization

Memory loss,
Dementia
Multiple Sclerosis
Epilepsy
TBI
Pediatric Assessment

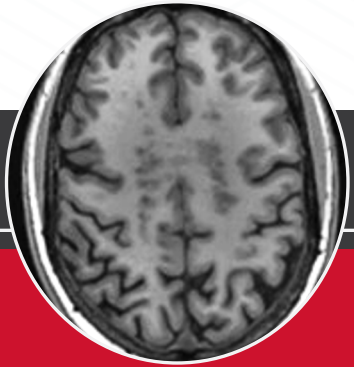
Clinical History/Reason for Exam:

Brain
 w/special attention to IAC
 w/special attention to Pituitary
 NeuroQuant

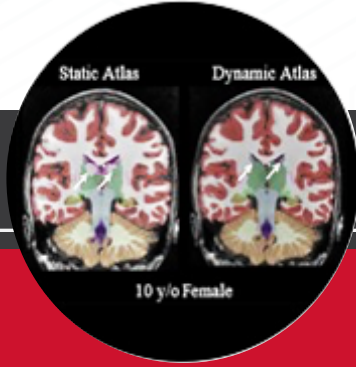
Integrates Within Existing Workflow



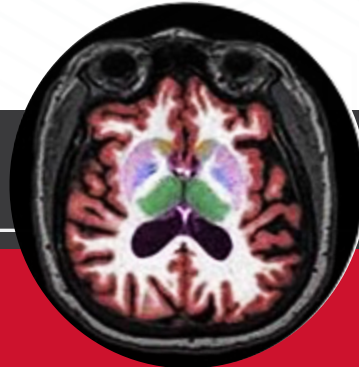
How NeuroQuant Works



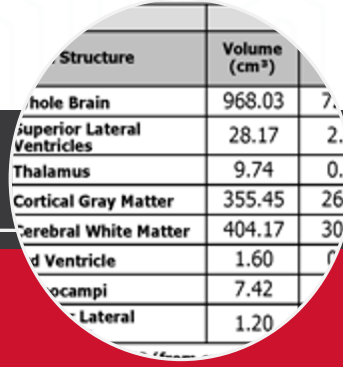
3D T1 MR images are uploaded to software for processing



Images registered to Dynamic Atlas™

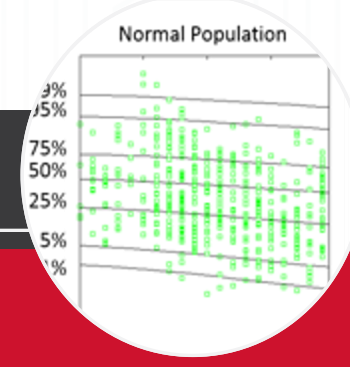


Brain structures identified and labeled



Structure	Volume (cm ³)	%
Whole Brain	968.03	7.1
Superior Lateral Ventricles	28.17	2.9
Thalamus	9.74	0.7
Cortical Gray Matter	355.45	26.3
Cerebral White Matter	404.17	30.8
Third Ventricle	1.60	0.1
Hippocampi	7.42	0.7
Basal Ganglia - Lateral	1.20	0.1

Volumes of brain structures are measured



Volumes compared to healthy normative reference data



Reports and segmented images returned to PACS

System Options

✓ Secure cloud-based system

- Log into the system anytime, virtually anywhere
- Two options are available to upload MRI series:
 1. Auto routed through CTXNode
 2. Manual upload



✓ Locally installed system

- Platform independent: Mac, Windows or Linux (Ubuntu) based systems
- MRI series are sent to a local network computer
- Directly from the modality
- Integrated with existing PACS solution



How Does NeuroQuant Support Physicians?

Quantitative MR Imaging Provides in Vivo Biomarkers for **Fast and Objective Evaluation** of:

- ✓ Alzheimer's Disease, MCI, Memory Loss
- ✓ Epilepsy
- ✓ Multiple Sclerosis
- ✓ Traumatic Brain Injury / Brain Trauma
- ✓ Brain Development

Helps Referring Physicians:

- ✓ Evaluate Disease Progression
- ✓ Monitor Disease Response to Treatments Over Time

Clinical Benefits:

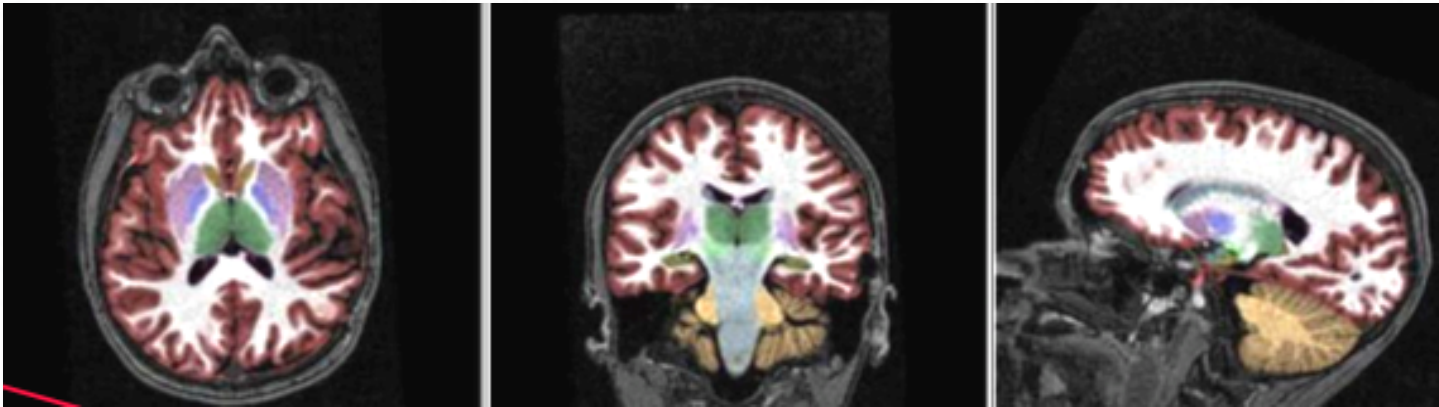
- ✓ Eliminates Manual, Subjective Processes
- ✓ Easy to Incorporate into Workflow
- ✓ Provides Evidence of Brain Volume Loss
- ✓ Available for Ages 3 Years to 100
- ✓ Delivers Additional Supportive Volumetric Data

What is Returned to PACs?

1

Segmented Images

- 3 series: Axial, Coronal, and Sagittal
- 256 images in each series



2

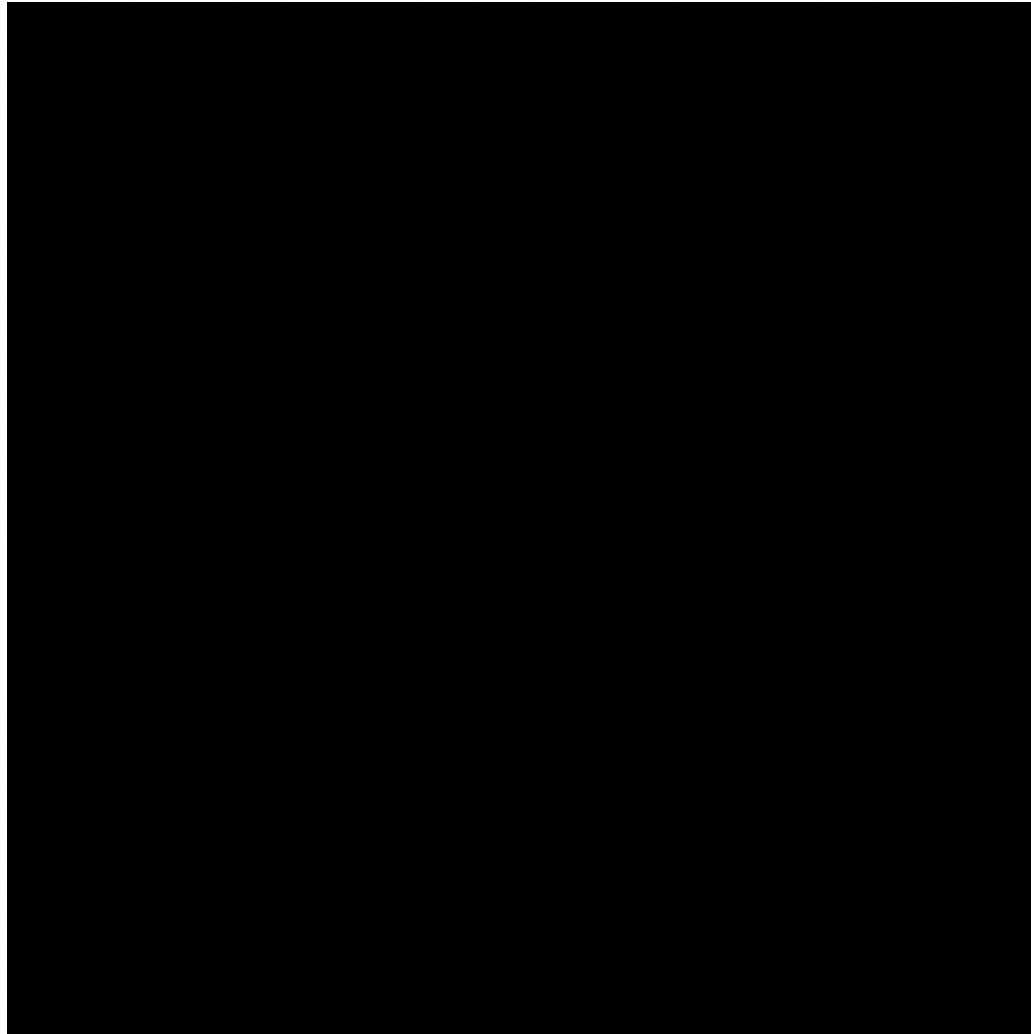
Change visualization if previous report is available

- Heat map overlay highlights areas of **atrophy**, **swelling**, and tissue shifts on current scan
- 3 series: Axial, Coronal, and Sagittal

3

NeuroQuant Report(s) + General Morphometry Report

A Quick Look at Segmentation



Overview of NeuroQuant Report Layout

NeuroQuant[®]
 Age Related Atrophy Report

CorTechs Labs, Inc
 4690 Executive Drive, Suite 250
 San Diego, CA
 858-459-9700

Version 3.0.0

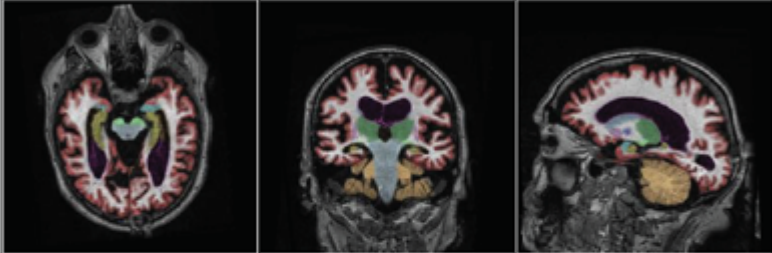
PATIENT INFORMATION

Patient ID:	Patient Name:	Sex:	Age:	Referring Physician:
		M	79	

SCAN INFORMATION

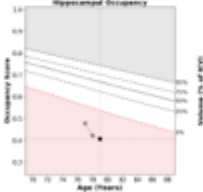
Scan Date:	Accession Number:

MORPHOMETRY RESULTS

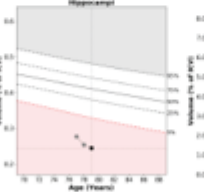


Brain Structure	Volume (cm ³)	% of ICV (5%-95% Normative Percentile)	Normative Percentile
Hippocampal Occupancy Score (HOC)	0.41	N/A	1
Hippocampi	4.52	0.25 (0.33 - 0.48)	1
Superior Lateral Ventricles	125.44	6.81 (1.88 - 5.25)	99
Inferior Lateral Ventricles	6.57	0.36 (0.15 - 0.31)	98

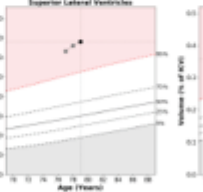
AGE-MATCHED REFERENCE CHARTS



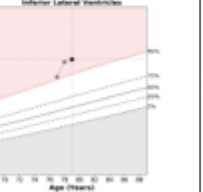
Hippocampal Occupancy



Hippocampi




Superior Lateral Ventricles



Inferior Lateral Ventricles

*The Hippocampal Occupancy Score is defined as ((Left Hippocampal Volume / (Left Hippocampal Volume + Left ILV Volume)) + (Right Hippocampal Volume / (Right Hippocampal Volume + Right ILV Volume))) / 2.0


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Patient demographic information, with referring physician and exam date

Axial, coronal and sagittal brain images

Table detailing report specific brain structures in raw volume, intracranial volume (ICV) percentage and normative percentile

Age and sex matched reference charts for report specific brain structures

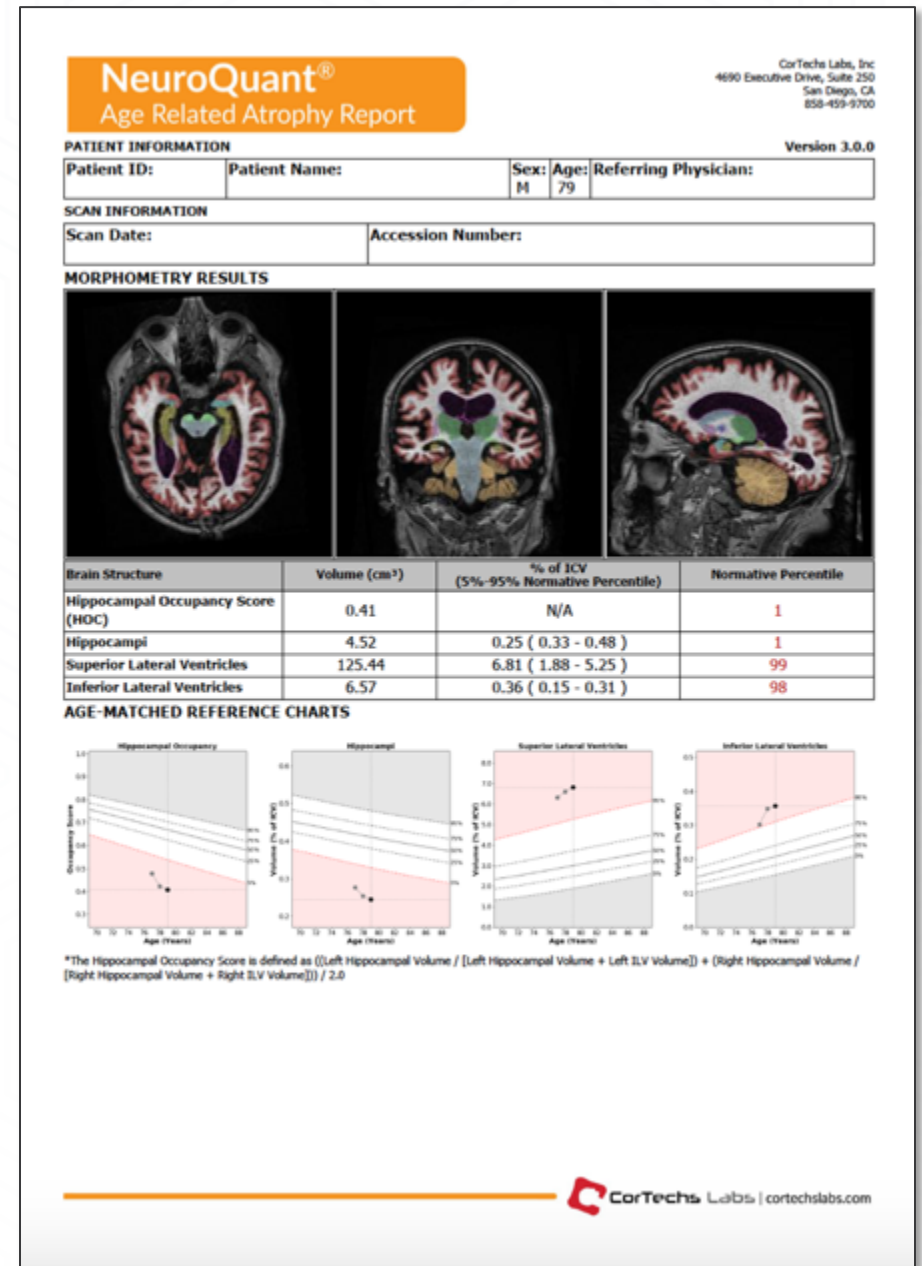
Age Related Atrophy Report

Clinical Assessment

- ✓ Age associated neurodegenerative conditions
- ✓ Dementia with Lewy bodies
- ✓ Alzheimer's disease
- ✓ Hippocampal sclerosis
- ✓ Frontotemporal dementia

Hippocampal Occupancy Score (HOC)

- ✓ A ratio of hippocampal volume to the sum of the hippocampal and ILV volumes in each hemisphere separately
- ✓ An estimate of mesial temporal lobe atrophy based on inferior lateral ventricle expansion



Age Related Atrophy Report - Example Interpretation

Example vMRI Findings				Hippocampal Occupancy	Hippocampi	Lateral Ventricles	Interpretation																	
<table border="1"> <thead> <tr> <th>Brain Structure</th> <th>Volume (cm³)</th> <th>% of ICV (5%-95% Normative Percentile)</th> <th>Normative Percentile</th> </tr> </thead> <tbody> <tr> <td>Hippocampal Occupancy Score (HOC)</td> <td>0.60</td> <td>N/A</td> <td>54</td> </tr> <tr> <td>Hippocampi</td> <td>6.06</td> <td>0.39 (0.29 - 0.43)</td> <td>72</td> </tr> <tr> <td>Superior Lateral Ventricles</td> <td>51.13</td> <td>3.30 (2.48 - 5.79)</td> <td>41</td> </tr> <tr> <td>Inferior Lateral Ventricles</td> <td>3.97</td> <td>0.26 (0.19 - 0.35)</td> <td>60</td> </tr> </tbody> </table> <p>AGE-MATCHED REFERENCE CHARTS</p>	Brain Structure	Volume (cm ³)	% of ICV (5%-95% Normative Percentile)	Normative Percentile	Hippocampal Occupancy Score (HOC)	0.60	N/A	54	Hippocampi	6.06	0.39 (0.29 - 0.43)	72	Superior Lateral Ventricles	51.13	3.30 (2.48 - 5.79)	41	Inferior Lateral Ventricles	3.97	0.26 (0.19 - 0.35)	60	<p><u>HOC</u>: 0.60 cm³ (54th percentile), within the normative 5th-95th percentile range for the same age and sex</p> <p>Normal Volume</p>	<p><u>Hippocampi</u>: 6.06 cm³ (72nd percentile), within the normative 5th-95th percentile range for the same age and sex</p> <p>Normal Volume</p>	<p><u>Superior Ventricles</u>: 51.13 cm³ (41st percentile), within the normative 5th-95th percentile range for the same age and sex</p> <p>Normal Volume</p> <p><u>Inferior Ventricles</u>: 3.97 cm³ (60th percentile)</p> <p>Normal Volume</p>	<p>Normal Scan: Does not support neurodegeneration</p>
Brain Structure	Volume (cm ³)	% of ICV (5%-95% Normative Percentile)	Normative Percentile																					
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Brain Structure	Volume (cm ³)	% of ICV (5%-95% Normative Percentile)	Normative Percentile																					
Hippocampal Occupancy Score (HOC)	0.42	N/A	1																					
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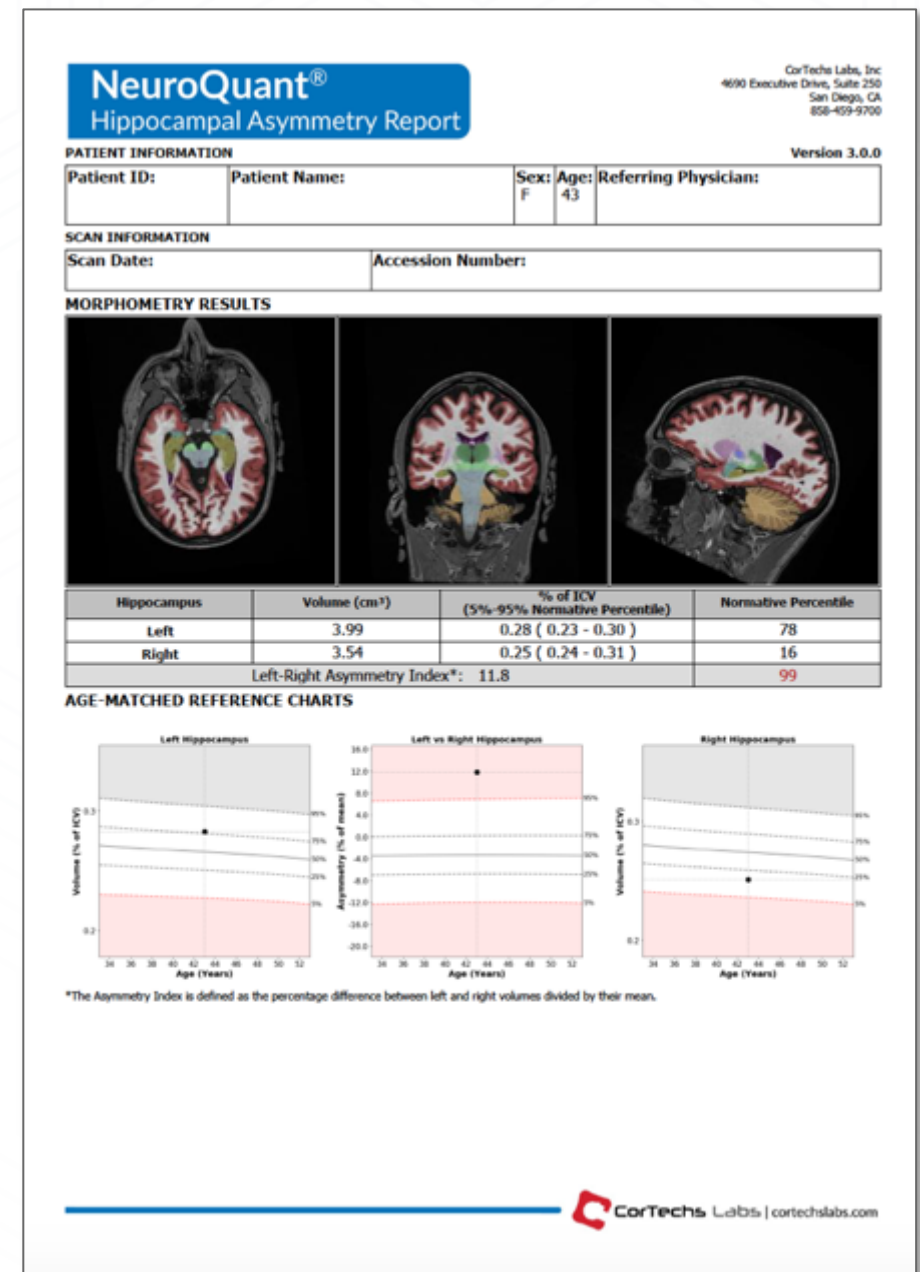
Hippocampal Asymmetry Report

Clinical Assessment

- ✓ Temporal lobe epilepsy
- ✓ Hippocampal Sclerosis
- ✓ Unilateral degenerative conditions

Hippocampal Asymmetry

- Left and right hippocampi quantified
- Hippocampi in relation to % of ICV
- Left to right asymmetry index
- Normative percentiles



Multi Structure Atrophy Report

Clinical Assessment

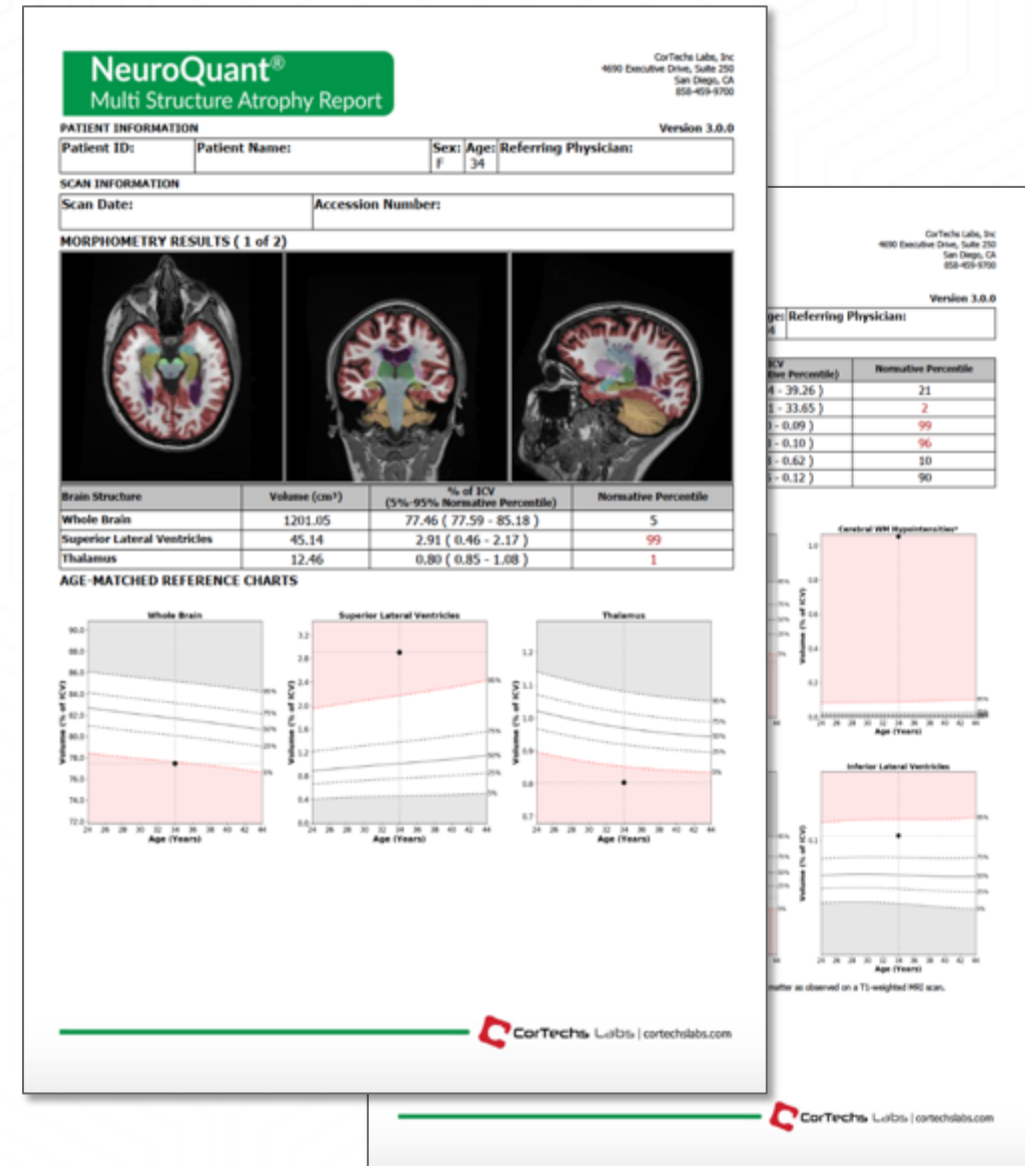
- ✓ Multiple sclerosis
- ✓ Age associated neurodegenerative conditions

T1 White Matter Hypointensities

- ✓ Monitoring and managing MS

9 Structures Graphically Displayed

- Whole Brain
- Cortical Gray Matter
- 3rd Ventricle
- Lateral Ventricles
- Cerebral White Matter
- Hippocampus
- Thalamus
- White Matter Hypointensity
- Inferior Lateral Ventricle



Triage Brain Atrophy Report

Clinical Assessment

- ✓ Subtle areas of post traumatic cortical encephalomalacia
- ✓ Subtle WM volume loss in patients with Diffuse Axonal Injury (DAI)
- ✓ Edema
- ✓ Atrophy

High Level Overview of 47 Structures

- Global Volumes
- Presented as normative percentiles
- Left & right – Global and Subcortical Brain structures
- Left & right – Cortical brain regions by lobe

NeuroQuant®
Triage Brain Atrophy Report

CorTechs Labs, Inc
 Address line 1
 Address line 2
 Preferred contact info

Version 3.0.0

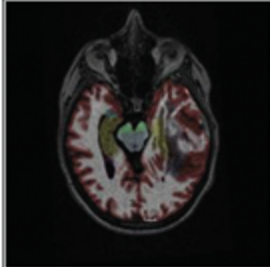
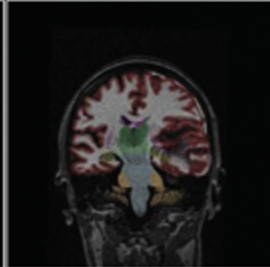
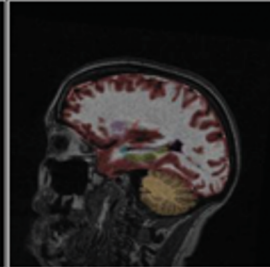
PATIENT INFORMATION

Patient ID:	Patient Name:	Sex:	Age:	Referring Physician:
		F	63	

SCAN INFORMATION


Scan Date:	Accession Number:


MORPHOMETRY RESULTS

Structure	Total Volume (cm ³)	Percentile		
		Left	Right	Total
Intracranial Volume	1579		78	
Whole Brain	1286		99	
Forebrain Parenchyma	1144		99	
Total Volumes				
Cerebral White Matter		98	99	99
Cortical Gray Matter		99	19	96
Ventricles		6	20	11
Cerebral WM Hypointensities*		99	1	99
Subcortical Structures				
Cerebellar White Matter	10	11	10	
Cerebellar Gray Matter	16	18	17	
Brainstem	-	-	67	
Thalamus	53	87	75	
Ventral Diencephalon	72	80	77	
Basal Ganglia				
Putamen		3	15	7
Caudate		1	17	1
Nucleus Accumbens		96	96	97
Pallidum		1	25	6
Cingulate		74	28	51
Anterior Cingulate		73	47	60
Posterior Cingulate		84	61	75
Isthmus Cingulate		40	8	21
Cortical Brain Regions				
Frontal Lobes				
Superior Frontal		99	19	89
Middle Frontal		99	31	82
Inferior Frontal		76	54	68
Lateral Orbitofrontal		99	9	88
Medial Orbitofrontal		53	14	31
Paracentral		24	40	33
Primary Motor		95	80	92
Parietal Lobes		99	14	99
Primary Sensory		99	19	93
Medial Parietal		99	46	98
Superior Parietal		99	45	91
Inferior Parietal		63	9	29
Supramarginal		89	42	71
Occipital Lobes		99	22	99
Medial Occipital		40	10	22
Lateral Occipital		27	3	10
Temporal Lobes		52	33	42
Transverse Temporal + Superior Temporal		99	53	99
Posterior Superior Temporal Sulcus		99	43	99
Middle Temporal		99	4	99
Inferior Temporal		87	85	89
Fusiform		98	6	66
Parahippocampal		99	59	98
Entorhinal Cortex		99	28	80
Temporal Pole		78	80	83
Amygdala		95	63	88
Hippocampus		30	96	75
		99	67	98

*White matter hypointensities are abnormally low signal intensity regions within white matter as observed on a T1-weighted MRI scan.


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 **CORTECHS Labs**

Product Portfolio - ©2019 CorTechs Labs, Inc.

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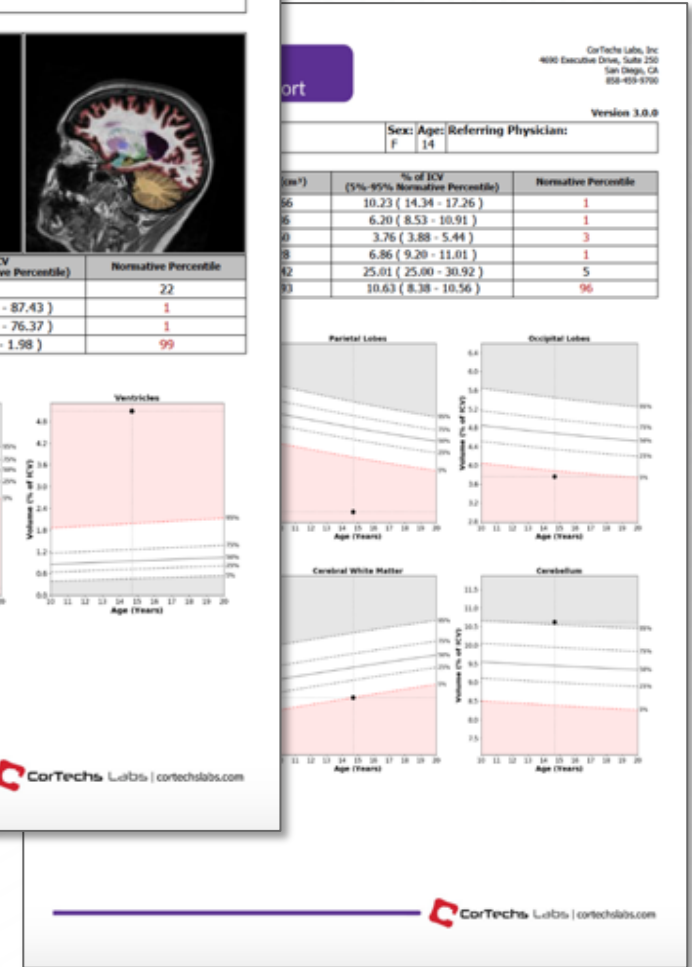
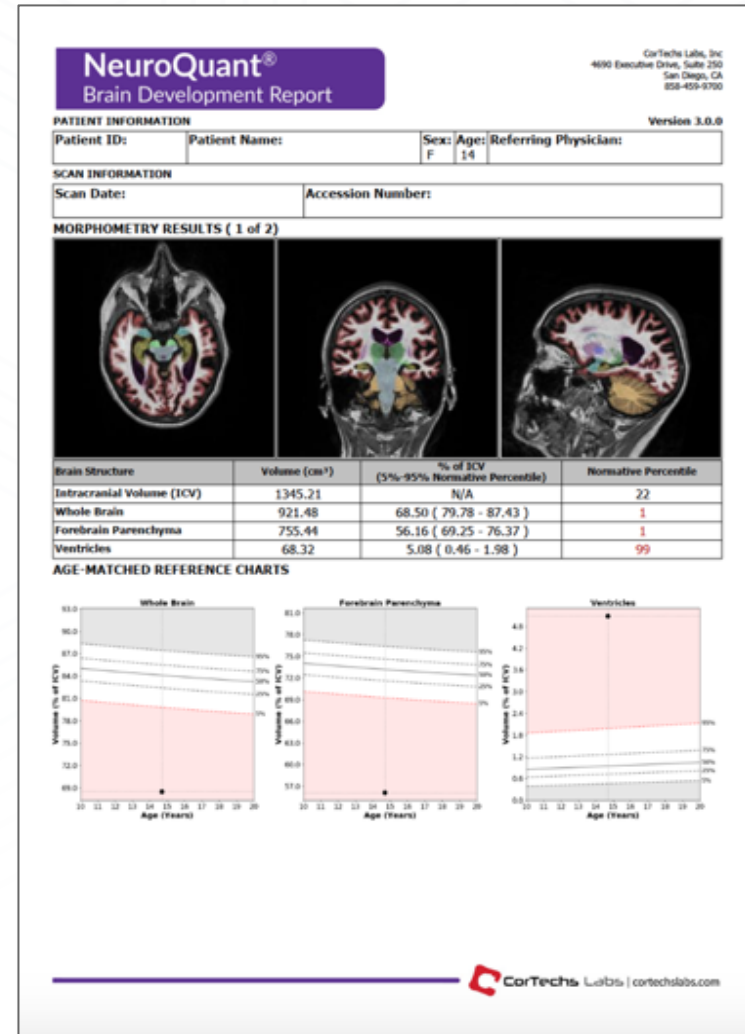
Brain Development Report

Clinical Assessment

- ✓ Leukodystrophies
 - ✓ ADEM
 - ✓ Cerebral Palsy
- ✓ Autism
 - ✓ Hydrocephaly

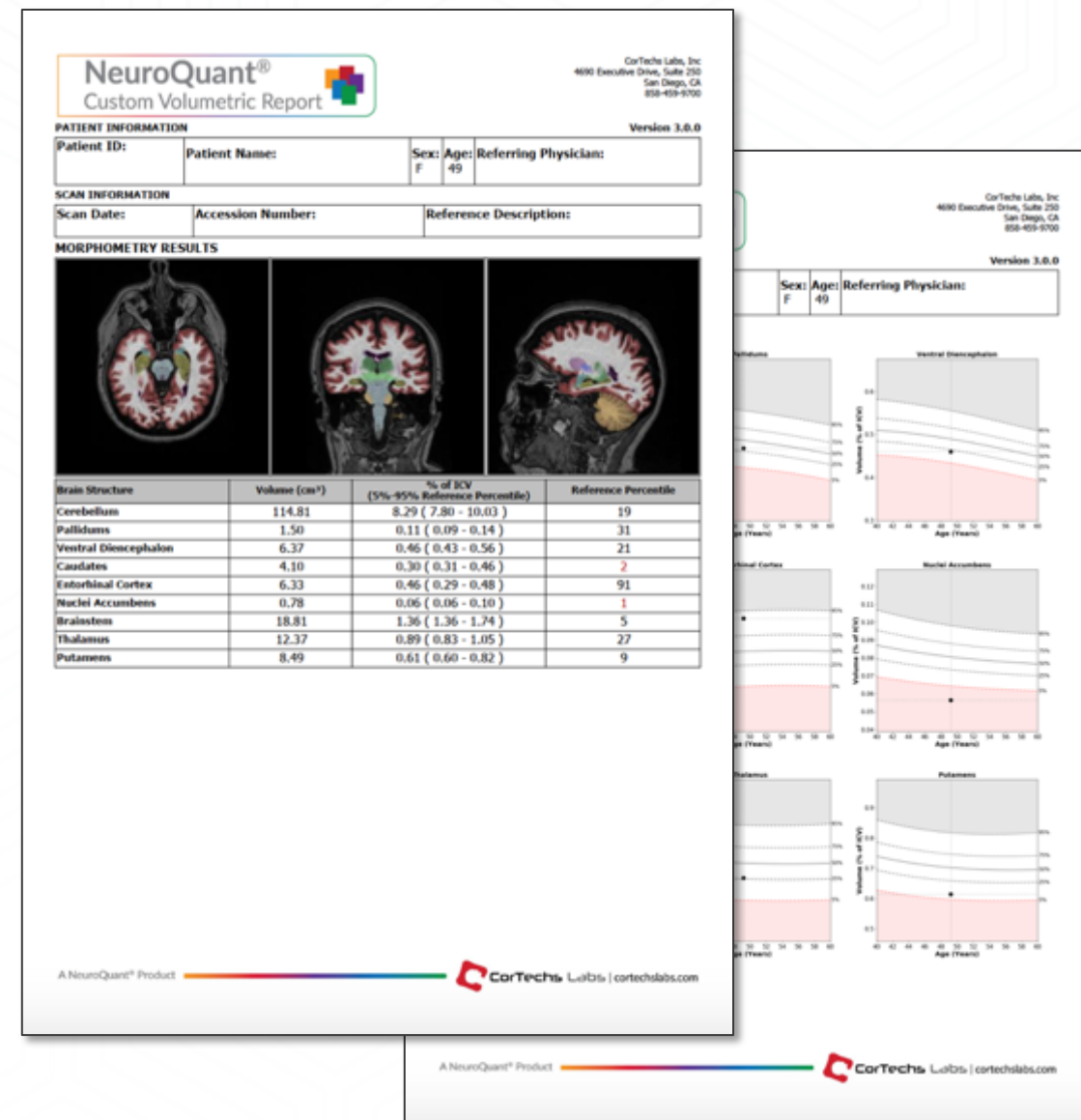
10 Structures Graphically Displayed

- ICV
 - Whole Brain
 - Forebrain Parenchyma
- Ventricles
 - Cerebral White Matter
 - Cerebellum
- Frontal Lobes
 - Parietal Lobes
 - Occipital Lobes
 - Temporal Lobes



Custom Volumetric Reports

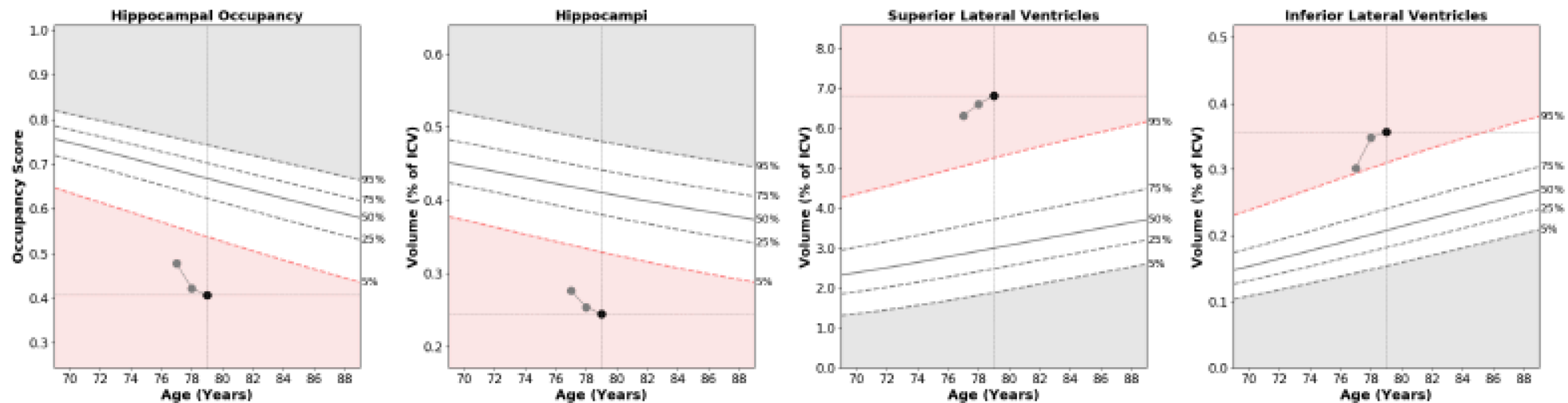
- ✓ Choose 9 different segmented brain structures
 - Left
 - Right
 - Both left and right
 - Asymmetry between left and right
- ✓ Incorporate brain structures not displayed in standard NeuroQuant reports
- ✓ Reduce the overall number of NeuroQuant reports to review
- ✓ Compare results to age- and sex-matched reference data or alternative (MCI or AD) reference data
- ✓ Separate license needed



Improve Patient Care with Longitudinal Tracking

Ongoing evaluation with multi time-point reports

AGE-MATCHED REFERENCE CHARTS

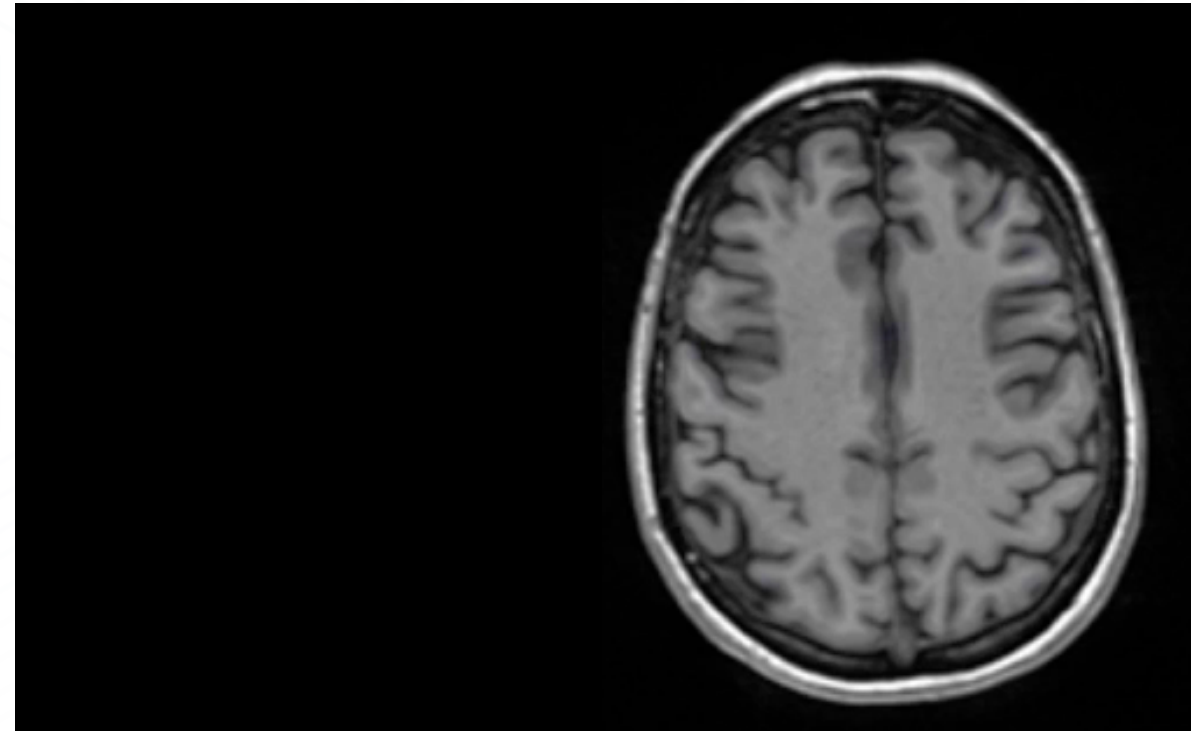


*The Hippocampal Occupancy Score is defined as $\left(\frac{\text{Left Hippocampal Volume}}{\text{Left Hippocampal Volume} + \text{Left ILV Volume}} \right) + \left(\frac{\text{Right Hippocampal Volume}}{\text{Right Hippocampal Volume} + \text{Right ILV Volume}} \right) / 2.0$

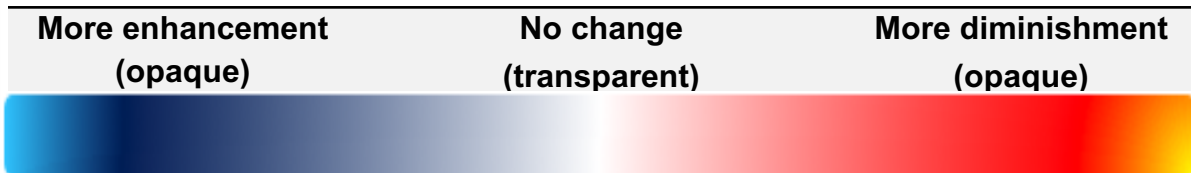
Ideal for reviewing patient cases on 1 comprehensive report versus 2 or 3

NeuroQuant Change Visualization

- ✓ Visualize volumetric change between two 3D T1 series
- ✓ Heat map overlay highlights areas of **atrophy**, **swelling**, and tissue shifts on current scan
- ✓ Easily visualize small changes to large volumetric shifts
- ✓ Monitor dementias, TBI, normal aging, and more



CHANGE COLORMAP





LesionQuant

Lesions, Quantified



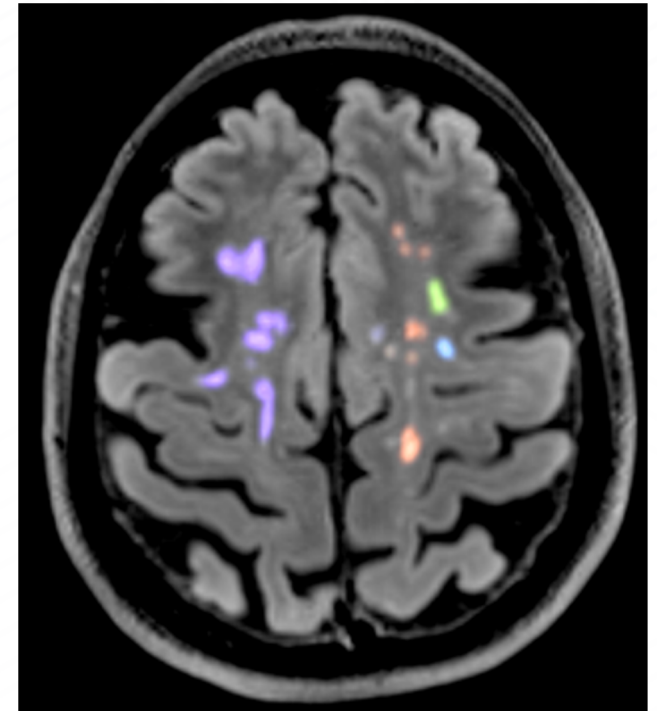
What is LesionQuant?



FDA CLEARED, CE MARKED, AND HEALTH CANADA, AUSTRALIA, AND KOREA LICENSED

Combines T2 FLAIR with the same 3D T1 MR images used for NeuroQuant for improved identification of brain lesions

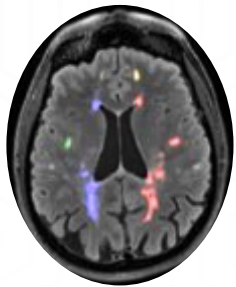
- 1 Automatic lesion detection and quantification
- 2 Comprehensive reports include brain structure volumes relevant to MS
- 3 Provides volumes and counts of all, new, active and resolving lesions
- 4 Quantify and Visualize change in lesion burden over time



LesionQuant™ - Lesions, Quantified.

Fast, accurate & proven automated FLAIR lesion quantification and visualization.

Lesion Segmentation



Color-coded FLAIR lesion overlay of lesion segmentation

Lesion Volume Change Visualization



Color-coded FLAIR lesion overlay of lesion volume change when prior scan data is available

Comprehensive Volumetric Report



Volumetric data of brain structures and all new, active, and resolving lesions

Exportable CSV File with Raw Data



CSV File with extensive data for research needs

How Does LesionQuant Support Physicians?



Combines T2 FLAIR with the same 3D T1 MR images used for NeuroQuant for improved identification of brain lesions



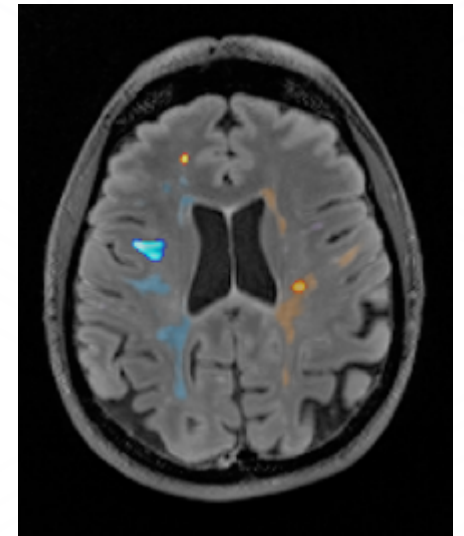
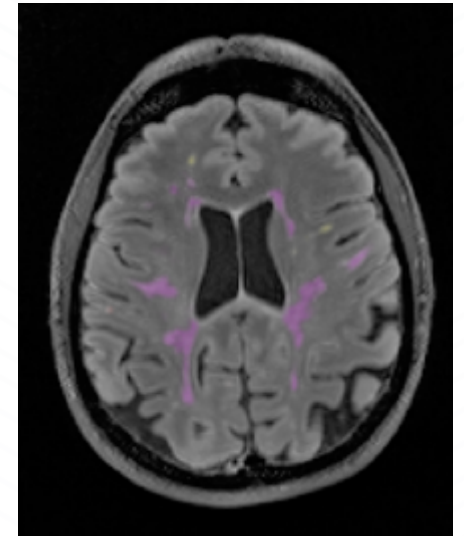
Automated

- Lesion identification, segmentation and count
- Lesion burden calculation and lesion size distribution
- Brain structure segmentation
- Multi time point evaluation
- Color-coded lesion segmentation visualization
- Color-coded lesion change visualization



Clinical benefits

- Reduces manual process
- Guides to the areas of most interest/concern
- Provides additional supportive volumetric data that can enrich clinical treatment planning and disease progression monitoring of patients



Integrates Within Existing Workflow

(3D T1+ T2 FLAIR non-contrast)



LesionQuant® Software



Clinician Request



Acquire MRI Scans
following LesionQuant
Protocol



PACS Server
(Behind Your Firewall)



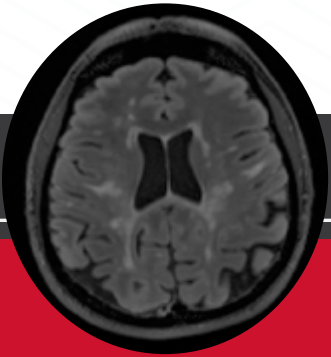
Report
Interpretation



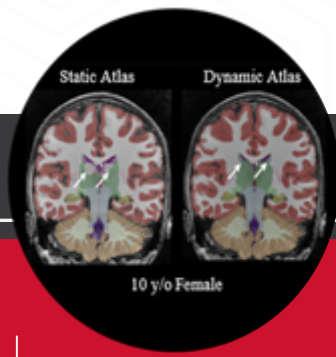
Patient and
Clinician Review

Report

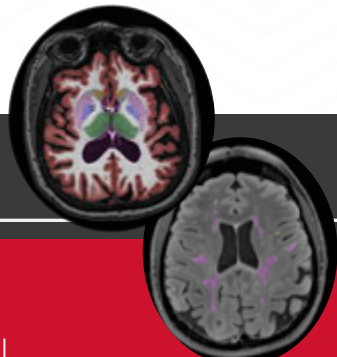
How LesionQuant Works



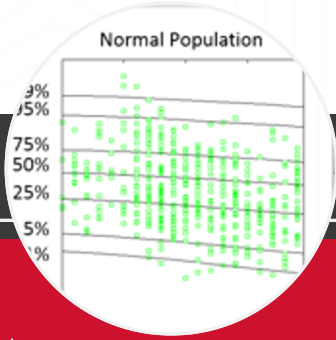
3D T1 and T2 FLAIR MR images are uploaded to software for processing



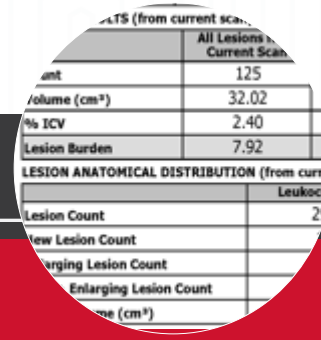
Images registered to Dynamic Atlas™



Brain structures and lesions are labeled and quantified



Volumes compared to healthy normative reference data

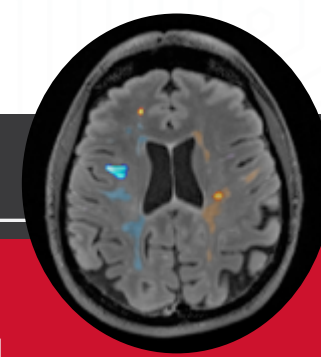


Parameter	Value
Leukocyte Volume (cm³)	125
Leukocyte Volume (cm³)	32.02
% ICV	2.40
Lesion Burden	7.92

LESION ANATOMICAL DISTRIBUTION (from current scan)

Category	Count
Lesion Count	25
New Lesion Count	
Enlarging Lesion Count	

All, new, active, and resolving lesions counted; lesion burden calculated



Change and longitudinal tracking provided from prior studies

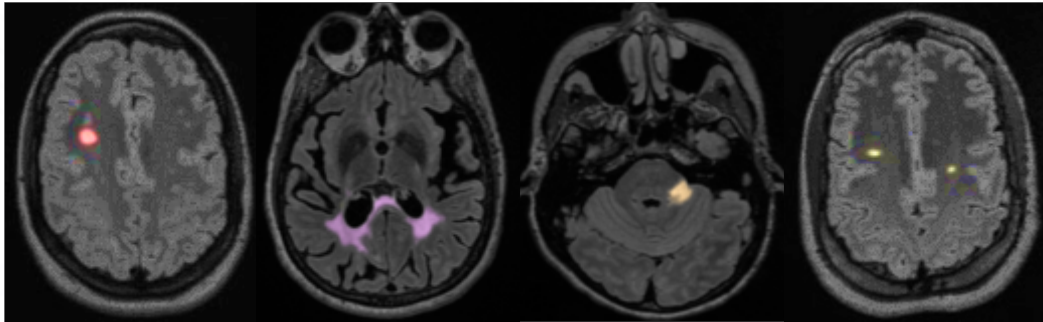


Reports and segmented images returned to PACS

LesionQuant – Single Time Point

Regional Lesion Visualization:

Lesions are color-coded based on anatomical location



Leukocortical

Periventricular

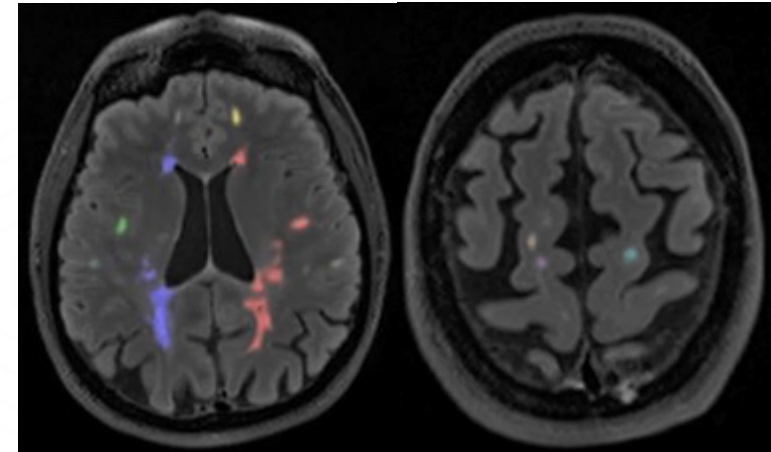
Infratentorial

Deep White Matter

- ✓ Identify dissemination in space
- ✓ Analyze patterns of distribution for concordance with MS or other white matter diseases
- ✓ Highlight areas of highest lesion burden

Individual Lesion Visualization:

Each lesion receives its own color



- ✓ Review the segmentation's lesion count
- ✓ Identify large confluent lesions
- ✓ Track lesions across orthogonal views

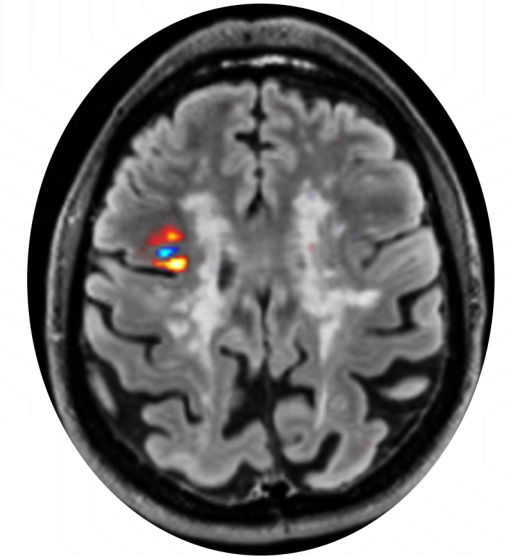
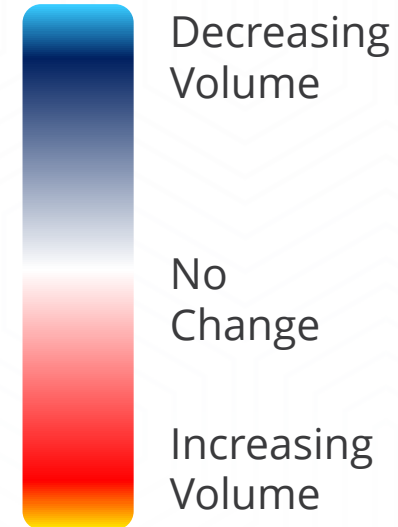
LesionQuant – Longitudinal Analysis

Lesion Change Visualization: Lesion volume changes are color coded to show net change per lesion, and highlight specific voxel change.



- ✓ Identify dissemination in time and space
- ✓ Highlight areas of disease activity
- ✓ Understand how areas of change affect overall lesion burden

Brain Change Visualization: Small scale volumetric changes are color-coded to highlight areas of increasing and decreasing intensity.

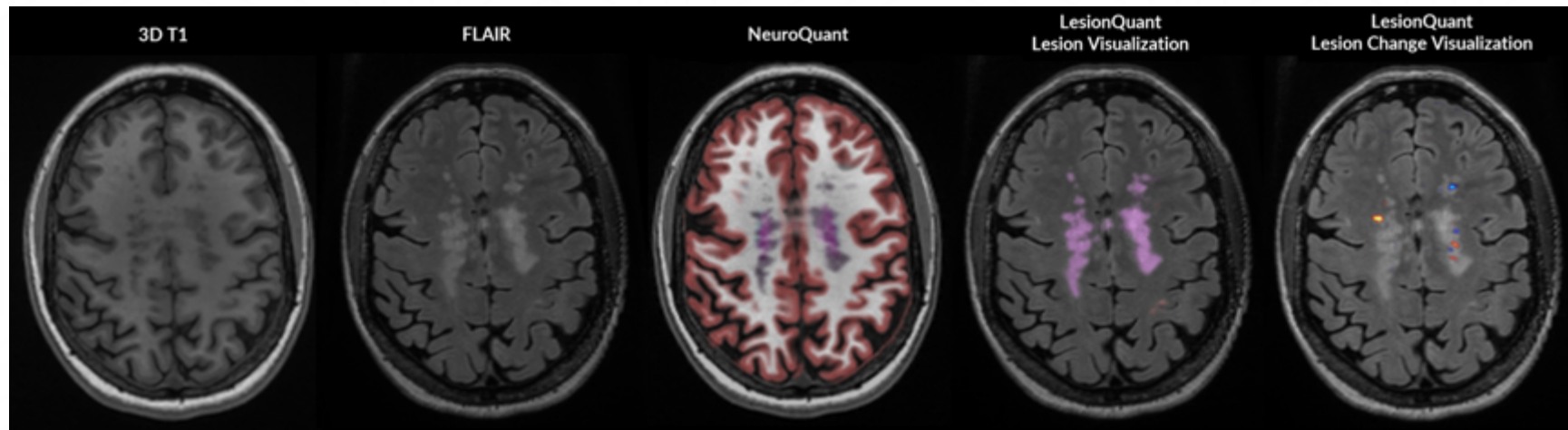


- ✓ Identify specific voxels that have changed
- ✓ Visualize brain changes outside the lesion map

What is returned to PACS for LesionQuant?

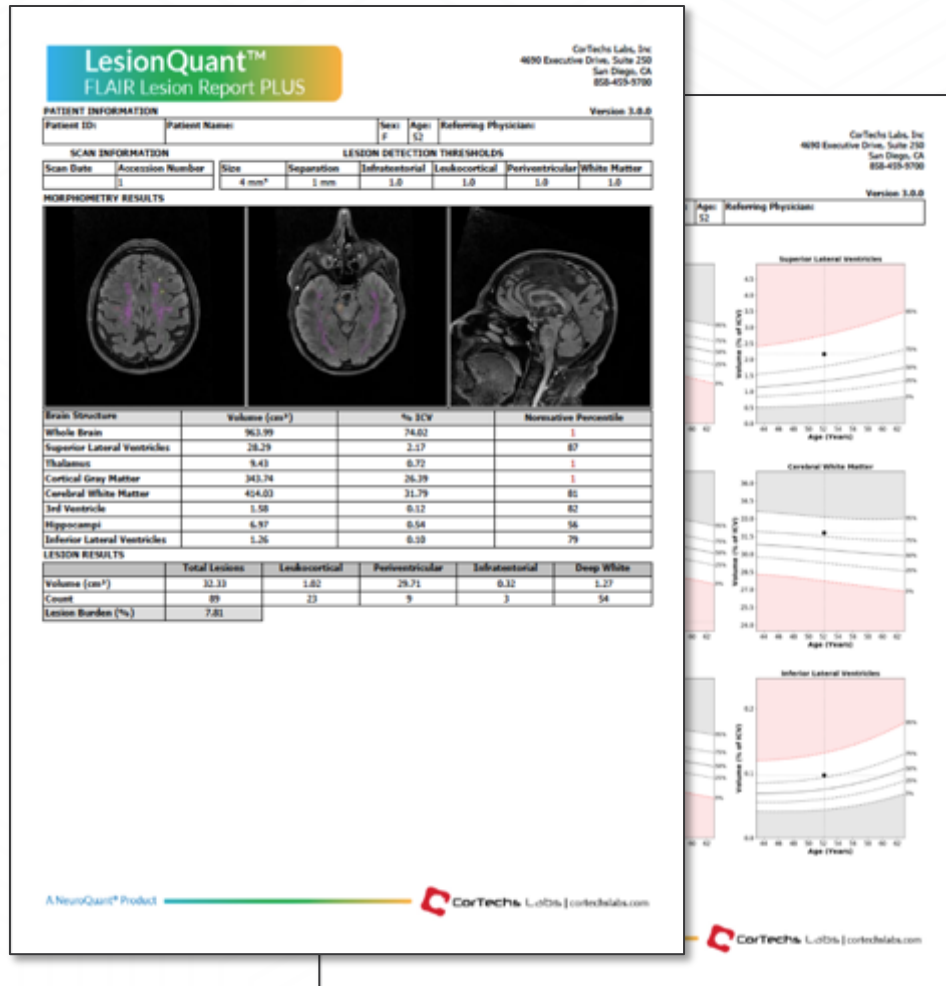
Up to 10 sets of color-coded volumetric image segmentations

1. LesionQuant Report
2. 3D T1 reconstructions
3. FLAIR reconstructions
4. Individual color coded overlays
5. Regional color coded overlays
6. NeuroQuant Volumetrics
7. Lesion change color coded overlays

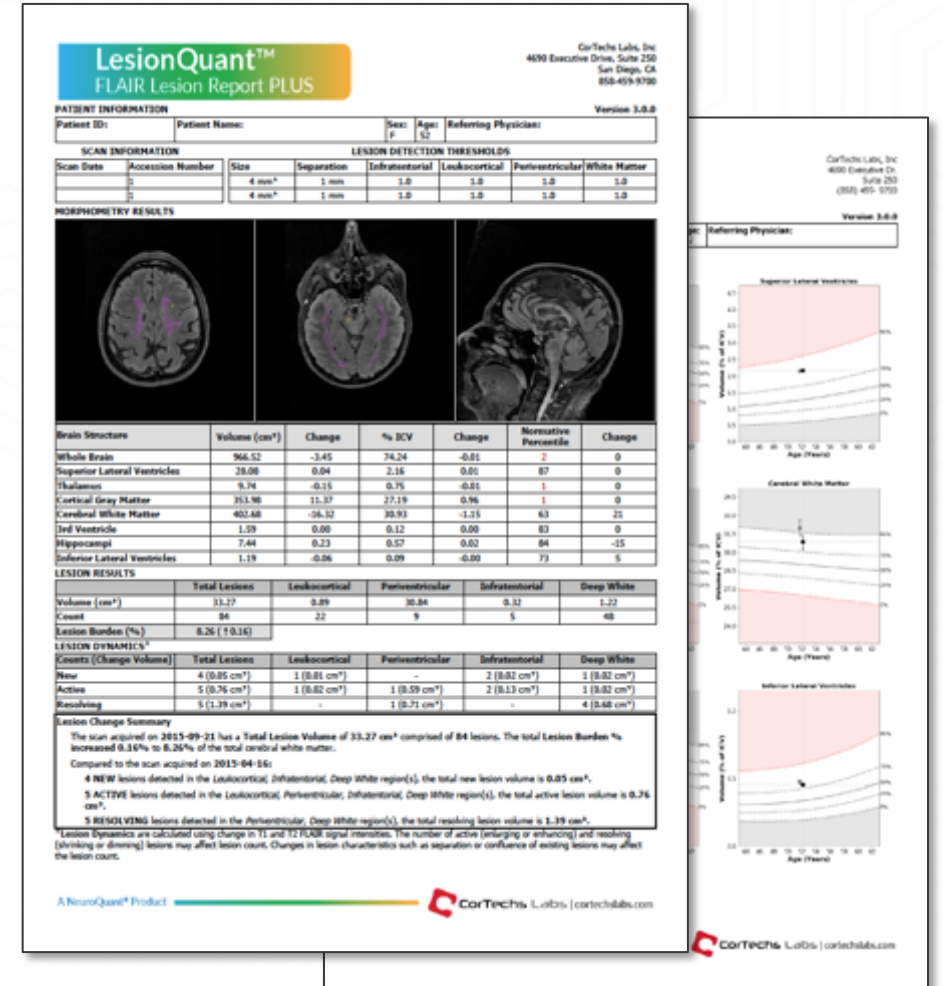


LesionQuant FLAIR Report PLUS

Single Time Point Report



Multi Time Point Report



Overview of LesionQuant FLAIR Report Layout

LesionQuant™
FLAIR Lesion Report PLUS

CorTechs Labs, Inc.
4990 Executive Dr.
Suite 250
(858) 459-5700

Version 3.0.0

PATIENT INFORMATION

Patient ID: LesionQuant	Patient Name: LesionQuant	Sex: F	Age: 52	Referring Physician:
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SCAN INFORMATION

Scan Date	Accession Number	Size	Separation	Infratentorial	Leukocortical	Periventricular	White Matter
2015-09-21	1	1 mm ³	2 mm	0.85	0.5	0.9	0.4
2015-04-16	1	1 mm ³	2 mm	0.85	0.5	0.9	0.4

LESION DETECTION THRESHOLDS

NONPARAMETRY RESULTS

Brain Structure	Volume (cm ³)	Change	% ICV	Change	Normative Percentile	Change
Whole Brain	966.52	-3.45	74.24	-0.01	20	-1
Superior Lateral Ventricles	28.08	0.04	2.35	0.05	89	0
Thalamus	9.73	-0.14	0.75	-0.01	1	1
Cortical Gray Matter	353.95	11.41	27.19	0.97	1	0
Cerebral White Matter	401.39	-15.43	30.83	-1.15	88	9
3rd Ventricle	1.59	0.00	0.12	0.00	87	0
Hippocampi	7.44	0.24	0.57	0.02	97	-6
Inferior Lateral Ventricles	1.19	-0.06	0.09	-0.00	81	3

LESION RESULTS

	Total Lesions	Leukocortical	Periventricular	Infratentorial	Deep White
Volume (cm ³)	34.68	0.95	32.39	0.35	0.99
Count	135	40	8	8	60
Lesion Burden (%)	8.64 (7.0-2)				

LESION DYNAMICS*

Counts (Change Volume)	Total Lesions	Leukocortical	Periventricular	Infratentorial	Deep White
New	4 (0.05 cm ³)	1 (0.01 cm ³)	-	2 (0.02 cm ³)	1 (0.02 cm ³)
Active	4 (0.51 cm ³)	1 (0.02 cm ³)	1 (0.36 cm ³)	2 (0.13 cm ³)	-
Resolving	1 (0.01 cm ³)	-	-	-	1 (0.01 cm ³)

Lesion Change Summary

The scan acquired on 2015-09-21 has a Total Lesion Volume of 34.68 cm³ comprised of 135 lesions. The total Lesion Burden % increased 0.20000000000000001% to 8.64% of the total cerebral white matter.

Compared to the scan acquired on 2015-04-16:

- 4 NEW lesions detected in the Leukocortical, Infratentorial, Deep White region(s), the total new lesion volume is 0.05 cm³.
- 4 ACTIVE lesions detected in the Leukocortical, Periventricular, Infratentorial region(s), the total active lesion volume is 0.51 cm³.
- 1 RESOLVING lesions detected in the Deep White region(s), the total resolving lesion volume is 0.01 cm³.

Lesion Dynamics are calculated using change in T1 and T2 FLAIR signal intensities. The number of active (enlarging or enlarging) and resolving (shrinking or dimming) lesions may affect lesion count. Changes in lesion characteristics such as separation or confluence of existing lesions may affect the lesion count.

A NeuroQuant® Product | CorTechs Labs | cortechslabs.com

Report name and user site information

NeuroQuant software version

Patient demographic information

Prior and current scan date and scanner information

Lesion size and separation selection for current and prior scans

Lesion visualization in two representative axial planes, and either corpus callosum cross section view (3D FLAIR) or third axial view (2D FLAIR)

Table detailing total volume, % ICV and normative percentile for current and prior scans AND change (when prior scan available) for

- Whole brain
- Lateral ventricle
- Thalamus
- Cortical gray matter
- Cerebral white matter
- Third ventricle
- Hippocampi
- Inferior lateral ventricle

Table detailing lesion count and volume for all, enlarging and new lesions, and lesion burden (if two time-points are available)

Table detailing anatomical lesion volume distribution for all, enlarging, and new lesions; total and new lesions counts (if two time-points are available)

LesionQuant Flair Report Sample Interpretation

Example vMRI Findings							Structures	Lesions	Interpretation
Brain Structure	Volume (cm³)	Change	% ICV	Change	Normative Percentile	Change	<p>All structures are within the normative range except for the following:</p> <p><u>Whole Brain:</u> 966.52 cm³ (2nd percentile), below the normative range Low Volume</p> <p><u>Thalami:</u> 9.43 cm³ (1st percentile), below the normative range Low Volume</p> <p><u>Cortical Gray Matter:</u> 353.95 cm³ (3rd percentile), below the normative range Low Volume</p>	<p>Total lesion count of 134 lesions</p> <p>46 Leukocortical lesions</p> <p>8 Periventricular lesions</p> <p>14 Infratentorial lesions</p> <p>66 Deep White Matter lesions</p>	<p>This report compared the current scan to a scan acquired five months prior</p> <p>LesionQuant has identified 134 lesions with the total lesion burden to healthy white matter volume of 8.71%</p> <p>The majority of lesions are located in the Leukocortical and Deep White regions demonstrating large confluent lesions</p> <p>The morphometry results demonstrate Whole Brain, Cortical GM and Cerebral WM demonstrate atrophy but are stable from previous scan</p> <p>The lesion change summary demonstrates a mild increase in overall lesion volume</p>
Whole Brain	966.52	-3.45	74.24	-0.01	2	0			
Superior Lateral Ventricles	28.08	0.04	2.16	0.01	87	0			
Thalamus	9.73	-0.14	0.75	-0.01	1	0			
Cortical Gray Matter	353.95	11.46	27.19	0.97	1	0			
Cerebral White Matter	401.54	-16.20	30.84	-1.14	61	22			
3rd Ventricle	1.59	0.00	0.12	0.00	83	0			
Hippocampi	7.43	0.24	0.57	0.02	83	-15			
Inferior Lateral Ventricles	1.19	-0.06	0.09	-0.00	73	5			
LESION RESULTS									
	Total Lesions	Leukocortical	Periventricular	Infratentorial	Deep White				
Volume (cm³)	34.96	1.33	31.36	0.79	1.48				
Count	134	46	8	14	66				
Lesion Burden (%)	8.71 (↑ 0.15)								
LESION DYNAMICS*									
	Total Lesions	Leukocortical	Periventricular	Infratentorial	Deep White				
Counts (Change Volume)									
New	4 (0.05 cm ³)	1 (0.01 cm ³)	-	2 (0.02 cm ³)	1 (0.02 cm ³)				
Active	5 (0.76 cm ³)	1 (0.02 cm ³)	1 (0.59 cm ³)	2 (0.13 cm ³)	1 (0.02 cm ³)				
Resolving	9 (2.09 cm ³)	1 (0.65 cm ³)	1 (0.71 cm ³)	3 (0.04 cm ³)	4 (0.68 cm ³)				
Lesion Change Summary									
<p>The scan acquired on 2015-09-21 has a Total Lesion Volume of 34.96 cm³ comprised of 134 lesions. The total Lesion Burden % increased 0.15% to 8.71% of the total cerebral white matter.</p> <p>Compared to the scan acquired on 2015-04-16:</p> <p>4 NEW lesions detected in the <i>Leukocortical, Infratentorial, Deep White</i> region(s), the total new lesion volume is 0.05 cm³.</p> <p>5 ACTIVE lesions detected in the <i>Leukocortical, Periventricular, Infratentorial, Deep White</i> region(s), the total active lesion volume is 0.76 cm³.</p> <p>9 RESOLVING lesions detected in the <i>Leukocortical, Periventricular, Infratentorial, Deep White</i> region(s), the total resolving lesion volume is 2.09 cm³.</p>									
(Age and sex matched reference charts on page 2 omitted)									



PETQuant™

PET Studies, Quantified



What is PETQuant?

PETQuant™

FAST, AUTOMATED ANALYSIS OF PET
BRAIN STUDIES

Enables physicians and researchers to perform post-acquisition analyses of PET brain studies to quantify sub-regional tracer binding in native patient brain space

1

Visual and statistical comparisons of normalized regional brain tracer

3

Values compared to normative database

2

Amyloid Deposition and Metabolism Analysis

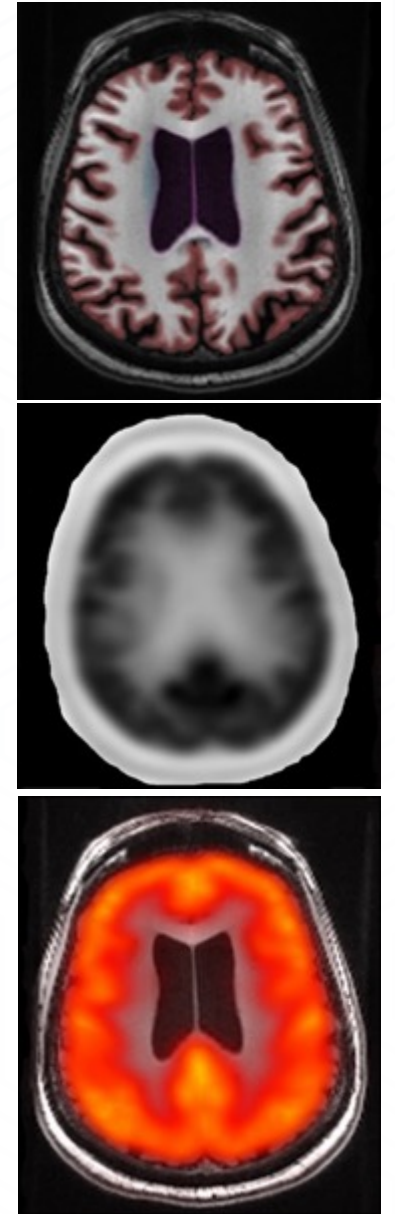
4

Color overlay visualization of 3D T1 MR on PET images



How does PETQuant Support Physicians?

- ✓ Combines PET or PET/CT with 3D T1 MRI images to quantify sub-regional tracer binding in native patient brain space
- ✓ Automated
 - PET tracer binding is localized to identified brain structures
 - Amyloid deposition and metabolism analysis based on tracer used
 - FDG (metabolic)
 - Florbetapir (amyloid)
 - Brain structure segmentation
 - Ages 18-95 supported
- ✓ Clinical Benefits
 - Reduces manual process
 - Provides improved quantitative phenotyping



PETQuant™ - PET Studies, Quantified.

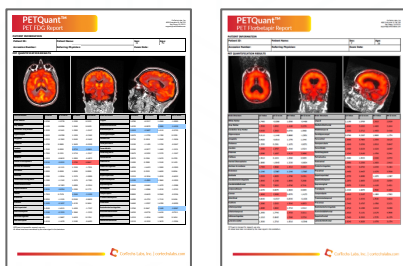
Fast, accurate & proven automated PET brain image analysis.



PETQuant is a research-only component of NeuroQuant that provides physicians with a cutting-edge tool for the study of diseases such as **Alzheimer's**. PETQuant automatically **quantifies PET tracer bindings** native patient brain space as identified by NeuroQuant 3D T1 MRI segmentation.

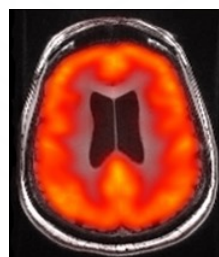
PETQuant Output

Comprehensive Volumetric Reports



Two reports options that correspond to the PET tracer used, Forbetapir or FDG

Color-Blended Segmentation Overlay



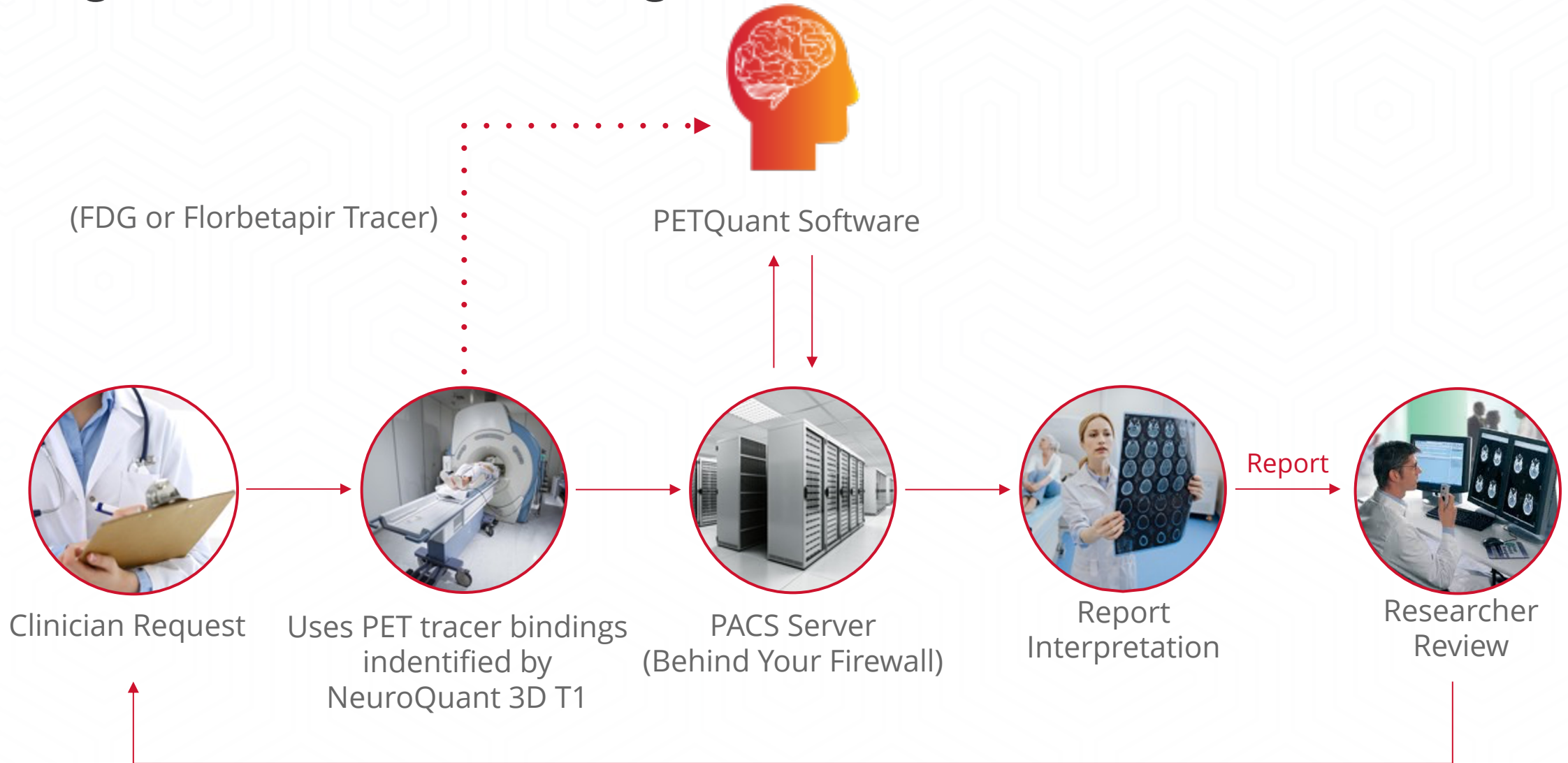
A color-blended brain segmentation overlay of the 3D MR series enables closer inspection on a PACS or other DICOM

Exportable CSV File with Raw Data



CSV File with extensive data for research needs

Integrates Within Existing Workflow



PETQuant Reports - Formatting



Report name and user site information

Patient demographic information with referring physician and exam date

Reformatted color overlay MR images in axial, coronal and sagittal planes

Table displaying in alphabetical order the normalized PET tracer intensity values and Z-score information for 46 brain structures (left and right hemispheres)

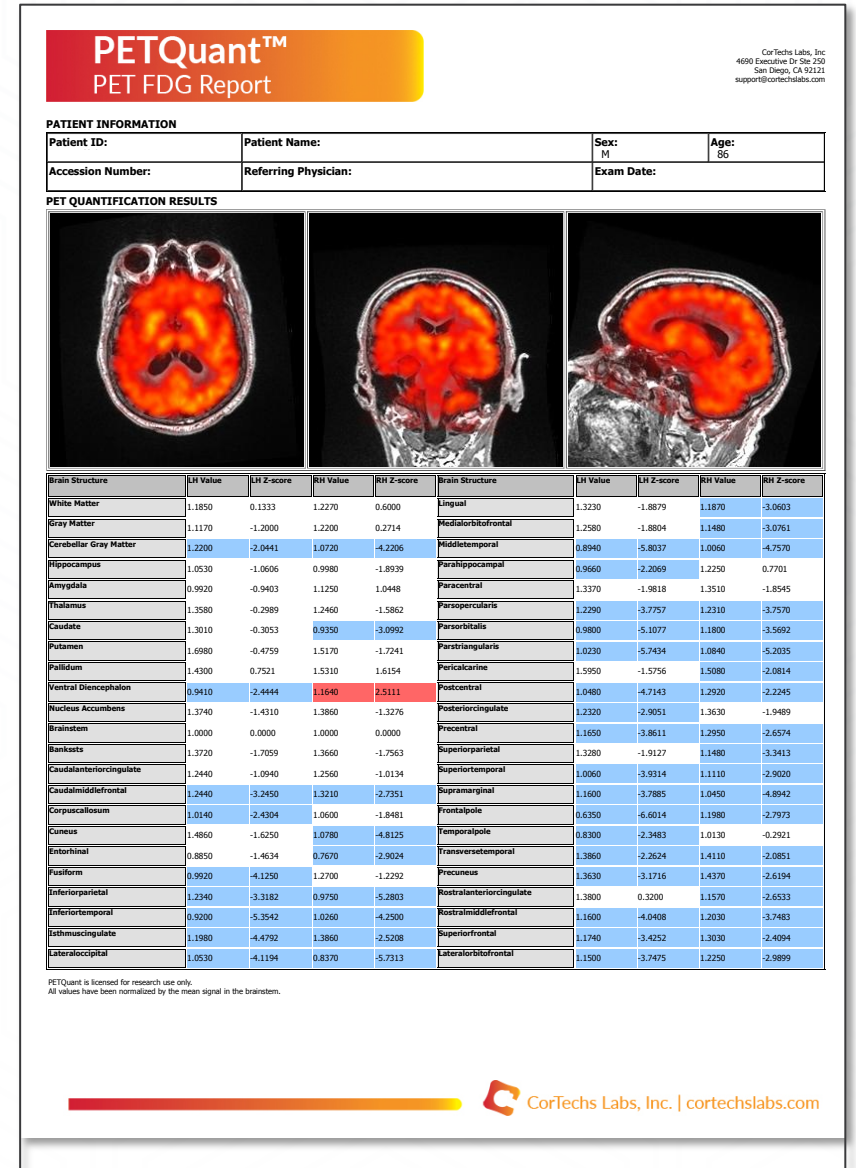
FDG Report

Research Use

- ✓ Alzheimer's Disease
- ✓ Frontotemporal Dementia
- ✓ Other dementias

FDG

- ✓ Binds to and labels where glucose is being metabolized. The PET scanner forms images based on the metabolism of FDG
- ✓ All FDG Report values have been normalized by the mean signal in the brain stem.



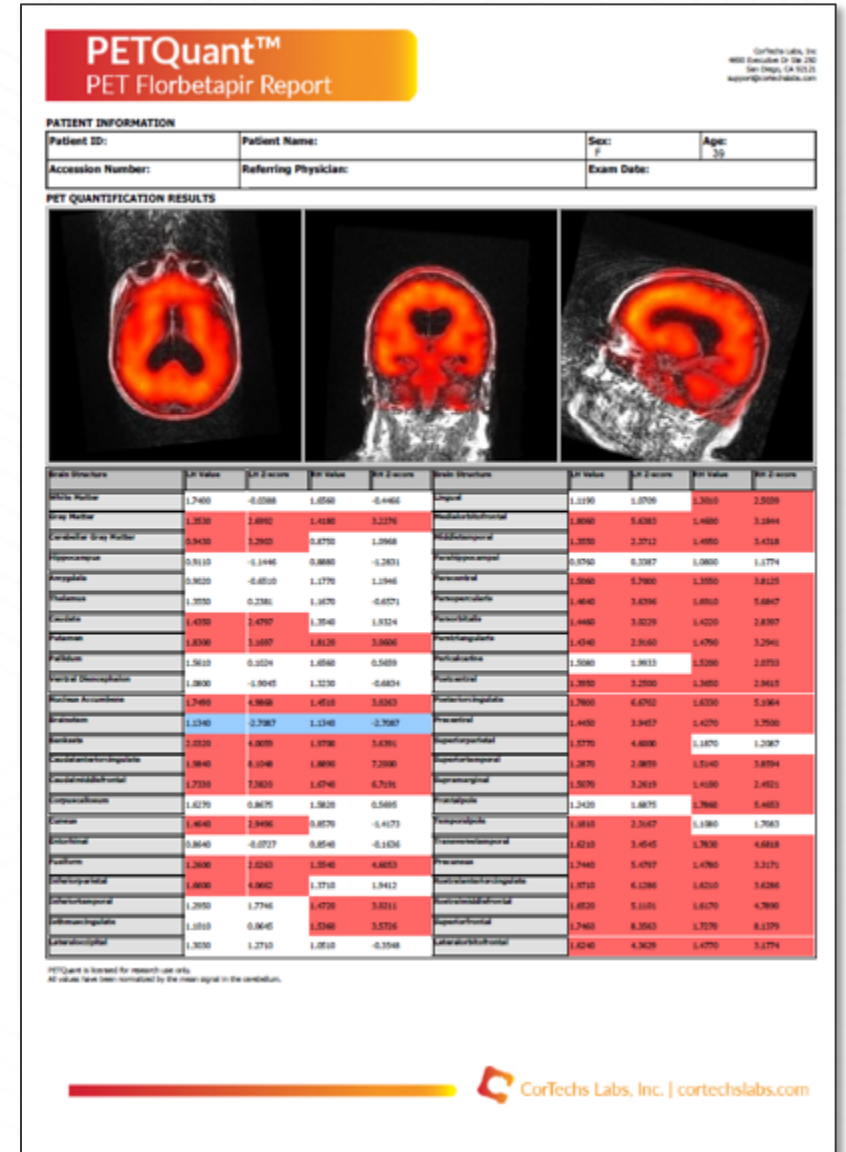
Florbetapir Report

Research Use

- ✓ Alzheimer's disease
- ✓ Frontotemporal dementia
- ✓ Dementia with Lewy bodies
- ✓ Corticobasal degeneration
- ✓ Primary progressive aphasia
- ✓ Dementia with Lewy bodies

Florbetapir

- ✓ Binds to beta-amyloid and reveals amyloid deposits, particularly in the regions known to be associated with beta-amyloid deposits
- ✓ All Florbetapir Report values have been normalized by the mean signal in the cerebellum.





CT CoPilot[®]

Head CT Scans, Quantified

CT CoPilot is a HealthLytix product distributed by CorTechs Labs



What is CT CoPilot?



FAST, AUTOMATED ANALYSIS OF HEAD CT SCANS

A radiology productivity solution that improves workflow efficiency, measurement accuracy, and clinical confidence by providing consistent views of head CT exams and automated quantitative measurements

- 1 Consistent Anatomical Alignment
- 2 Automated Quantification

- 3 Distinct Visibility of Change Over Time



How does CT CoPilot Support Physicians?

 CT CoPilot enables radiologists to provide more accurate clinical assessments, achieving high levels of clinical confidence and productivity.

Automated

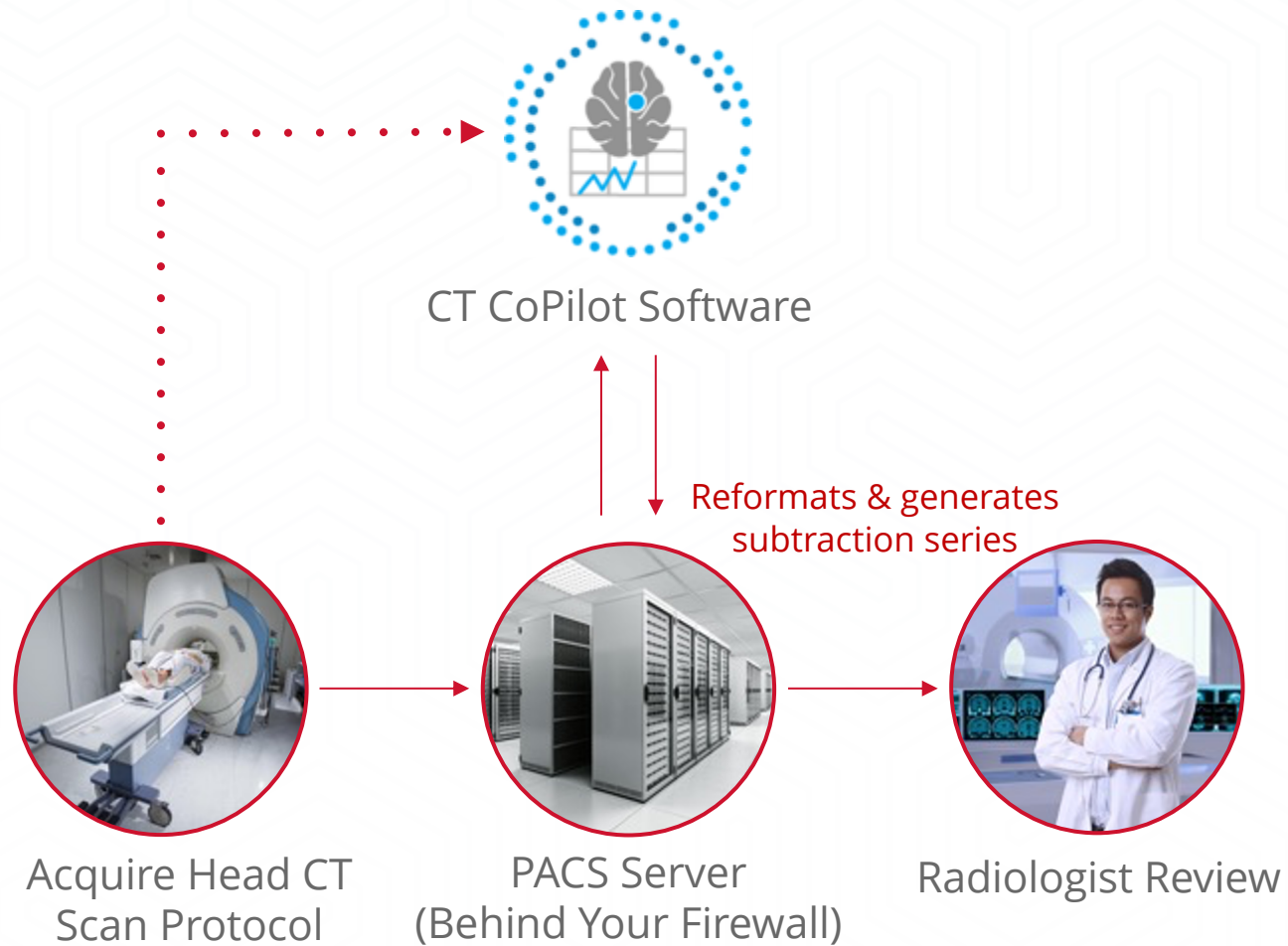
- Registers images to an anatomical atlas and generates aligned reformatted images
- Generates a subtraction series of current to prior exams for improves conspicuity of change over time
- Segments and quantifies lateral ventricle volume, intracranial volume and midline shift index, and reporting change over time

Clinical benefits

- Reduced interpretation time
- Standardization of exam viewing
- Improved clinical certainty



Integrates Within Existing Workflow



CT CoPilot Report

Clinical Use

- ✓ Improves clinical certainty and reduces interpretation time

4 Quantitative Measurements

- ✓ Midline Shift Index
- ✓ Total Intracranial Volume
- ✓ Lateral Ventricle Volume (LVV)
- ✓ LVV Change between current and prior study

HealthLytx CT COPILOT®
Quantitative Report
04/01/2019 1:37 PM

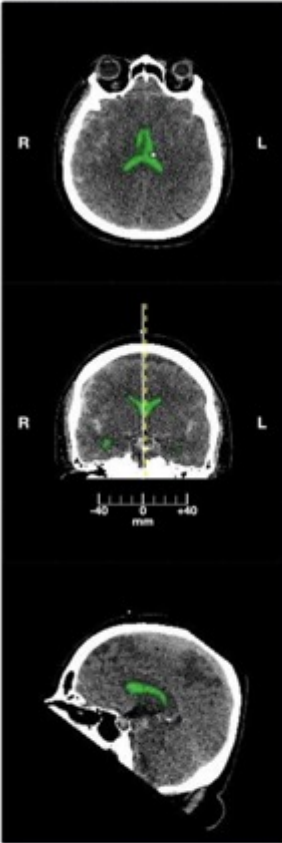
STUDY INFORMATION

Example005 PATIENT	Example005 PATIENT ID	44 AGE	F SEX	Doctor REFERRING PHYSICIAN	Hospital INSTITUTION
-----------------------	--------------------------	-----------	----------	-------------------------------	-------------------------

QUANTITATIVE RESULTS

CURRENT STUDY		
10000008 ACCESSION NUMBER	03/17/2016 DATE	4:53 AM TIME
NAME	VALUE	
Midline Shift Index <small>msi</small>	2.7 mm (L)	
Total Intracranial Volume <small>icv</small>	1251.0 mL	
Lateral Ventricle Volume <small>lvv</small>	19.5 mL (1.6% ICV)	
LVV Change vs. Prior	-9.50 mL (-32.8%)	

SEGMENTATION RESULTS



PRIOR STUDY

10000007 ACCESSION NUMBER	03/16/2016 DATE	6:31 PM TIME
NAME	VALUE	
Midline Shift Index <small>msi</small>	2.8 mm (L)	
Total Intracranial Volume <small>icv</small>	1246.0 mL	
Lateral Ventricle Volume <small>lvv</small>	29.0 mL (2.3% ICV)	

HEALTHLYTX
4747 EXECUTIVE DR, SUITE 420
SAN DIEGO, CA 92121
SUPPORT@HEALTHLYTX.COM

VERSION RELEASE: 1.5.3-DEV
DTIN: 0086000004820

CT CoPilot Report - Formatting

HealthLytx CT COPILOT® Quantitative Report 04/01/2019 1:37 PM

STUDY INFORMATION

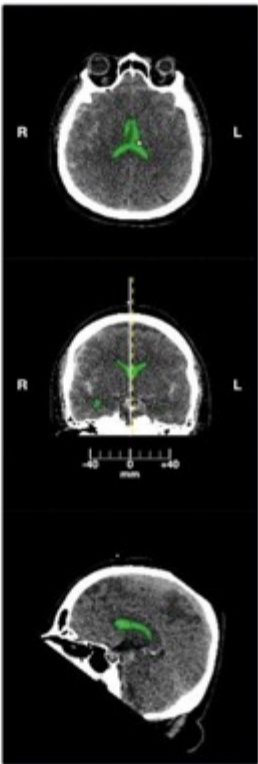
Example005 Example005 44 F Doctor Referring Physician Hospital Institution

PATIENT PATIENT ID AGE SEX REFERRING PHYSICIAN INSTITUTION

QUANTITATIVE RESULTS SEGMENTATION RESULTS

NAME	VALUE
Midline Shift Index μm	2.7 mm (L)
Total Intracranial Volume icv	1251.0 mL
Lateral Ventricle Volume lvv	19.5 mL (1.6% ICV)
LVV Change vs. Prior	-9.50 mL (-32.8%)

NAME	VALUE
Midline Shift Index μm	2.8 mm (L)
Total Intracranial Volume icv	1266.0 mL
Lateral Ventricle Volume lvv	29.0 mL (2.3% ICV)



HEALTHLYTX 4747 EXECUTIVE DR. SUITE 400 SAN DIEGO, CA 92121 SUPPORT@HEALTHLYTX.COM

VERSION RELEASE-1.5.3-DEV QTIN 02660000000000

Patient demographic information with referring physician

Realigned and reformatted color overlay CT images in axial, coronal and sagittal planes

Current and prior scan information with each table displaying lateral ventricle volume, intracranial volume, midline shift index, and change in these metrics over time



Additional Information

PowerScribe 360, CSV Export, Dark
Background Reports , Reimbursement

Compatible Scanners

- Required and tested scanner settings
- Ensure accuracy and reliability of MR image segmentation

NeuroQuant 3D T1 MRI



- GE 1.5 T and 3.0 T scanners
- Philips 1.5 T and 3.0 T scanners
- Siemens 1.5 T and 3.0 T scanners
- Canon 1.5 T and 3.0 T scanners
- Hitachi 1.2 T, 1.5 T, & 3.0 T scanners

LesionQuant T2 FLAIR MRI



- GE 1.5 T and 3.0 T scanners
- Philips 1.5 T and 3.0 T scanners
- Siemens 1.5 T and 3.0 T scanners
- Canon 1.5 T and 3.0 T scanners
- Hitachi 1.2 T, 1.5 T, & 3.0 T scanners

PETQuant PET & PET/CT

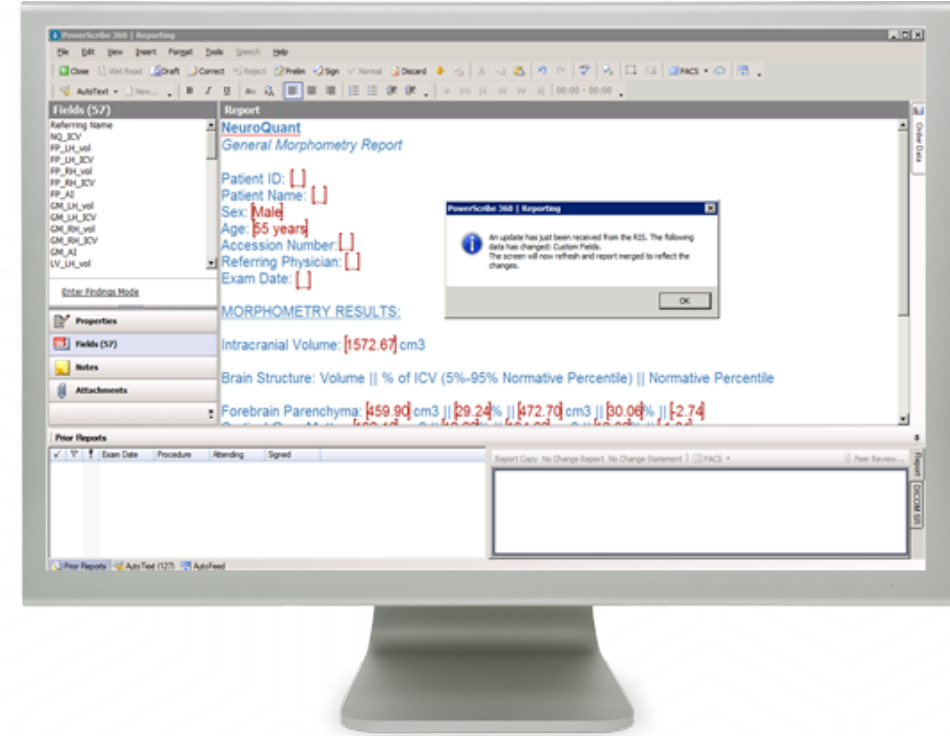


- GE PET and PET/CT scanners
- Philips PET and PET/CT scanners
- Siemens PET and PET/CT scanners

- NeuroQuant 3D T1 non-contrast
- LesionQuant both 3D T1 and T2 FLAIR
- PETQuant requires both 3D T1 and PET or PET/CT for processing

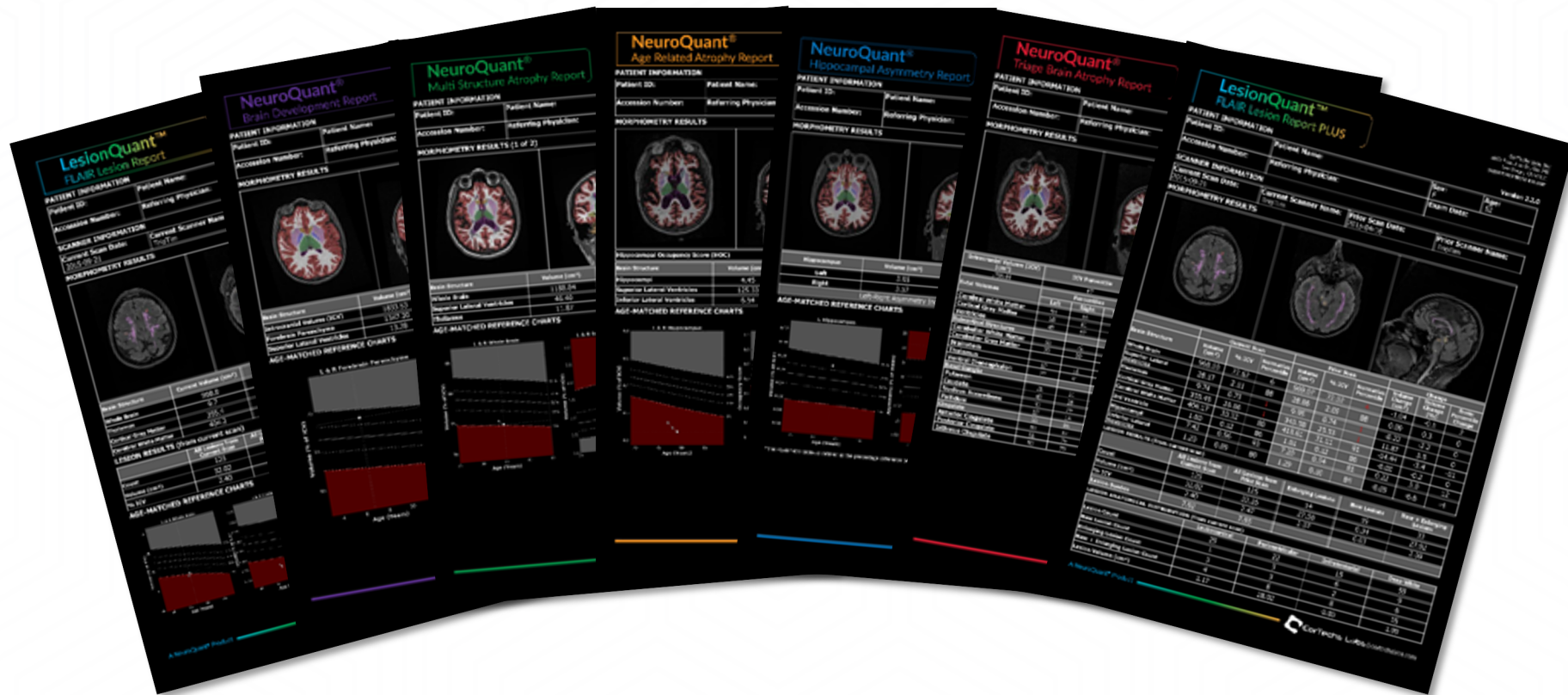
Integrate NeuroQuant with PowerScribe 360

- ✓ NeuroQuant data is pre-populated into PowerScribe 360 prior to report dictation
- ✓ Works with online and installed NeuroQuant systems
- ✓ Eliminate time consuming dictation and transcription errors of numeric results
- ✓ More time efficient, data-rich and accurate reporting



Dark Background Report Option

- ✓ For comfortable reading room review
- ✓ White background still available for download as a PDF



Billing & Reimbursement

- ✓ NeuroQuant and LesionQuant are reimbursable, with the average range being \$40-\$95
- ✓ **The main CPT® code is 76377**
 - Category - Other Diagnostic Radiology (Diagnostic Imaging), Related Procedures
 - Definition - 3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality
- ✓ **Additional codes**
 - CPT 70553
 - CPT 70551
 - Category – Diagnostic Radiology (Diagnostic Imaging), Procedures of the Head and Neck

Contact Us



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